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Architectural Sketching for Students.

AT this time of year, when all the world is thinking of holidays, almost every earnest student of architecture, young or old, is hunting up materials and turning over maps and "Murrays" in preparation for that most delightful and now universal form of study, a sketching trip.

Sketching trips as holidays have this immense advantage to all constitutionally industrious individuals (and constitutional industry is still a failing with many Englishmen), that while they are recreation from routine office work, and involve the taking of a great deal of healthy exercise and many changes of air and scene, they yet involve also a great deal of hard work of a substantially useful and even, in the end, remunerative kind. It is no exaggeration to say that any architectural student who has any real enthusiasm or love of his art is quite certain to work longer hours and to keep closer to his work, when taking such a journey as we are speaking of, than he does in his ordinary course at home. He usually starts with a programme far more comprehensive than he can properly carry out,—probably one or two good-sized towns are to be "done" in a week, not to speak of expeditions to outlying places of interest. This, it is true, is certain to be gradually thrown over, and would be so sooner, but that at each point he promises himself he will return next year or the year after; but even then he is very unfortunate, or very dense, if he does not find so much to study that, get up as early as he will and slip into his work as briskly as he may, and leave all he can in the way of titles and dates and notes to be written in the evenings, still he will leave each place with a sigh, and very likely run the risk of losing his train by stopping on his way to the station to note something he has missed before.

And this leads us to recommend to the inexperienced that, if their work lies in a town, they should not be in too much hurry to sit down to it, but should leave sufficient time to thoroughly inspect the place first, and decide upon what is of most interest and to be first tackled. Of course it is possible to overdo the sight-seeing and neglect the sketching, but the first should have its place too.

We may, perhaps, be allowed to doubt, not the value of real sketching to the real student (that cannot well be exaggerated), but whether its advantages have not been so often and so strongly insisted upon that many a youngster in the profession has got a notion that all he must do to become an "artistic" architect is to sketch; how or what, it matters very little, if at all,—only he must sketch; and some such beginners have gone abroad on long and expensive journeys with insufficient knowledge either of sketching or of what is worth sketching, to come home again with a great many sheets of laboured drawings, chiefly of architectural curiosities, but with a minimum of benefit to their professional knowledge.

Some study and preparation is necessary for sketching, as for most other things, and, if a man is to reap the full benefit of his labour, it is also necessary for him, in this as in other matters, to consider the end for which he is working. Sir Gilbert Scott was a great sketcher, and he and the other church-restorers of his time had very definite aims and ideas upon the subject; they wanted "precedents," they wanted to master the details of styles which had not previously been studied, and a knowledge of which it was impossible to obtain, even superficially, except by a close study of buildings of the period; therefore, they did what Sir Gilbert Scott recommended in one of his Royal Academy Lectures, they sketched everything,—that is, everything Gothic, anything that was not Gothic was not "anything" to them,—and they measured most things, and succeeded in obtaining a knowledge of the details of the Gothic periods which was very remarkable; whether they succeeded in being good architects in all respects we need not discuss. Now, we cannot, even if we would, all of us be church-restorers, but we shall nevertheless not go far wrong if we do what we may to follow the same course, only remembering that "everything" should for us mean everything beautiful or profitable for instruction, and that we must not regard these qualities as special to any one style. To 'prentice hands we would say, "Avoid curiosities and grotesques." 'Prentice hands are uncommonly fond of curiosities, but of all things they are least profitable; what is most profitable and most likely to "come in useful," is what is unpretentious, or sometimes even what is in a certain sense, common-place.

William Burges used to say that the object of architectural sketching is to find out how certain effects that we admire have been produced, not that we may reproduce them, but that we may know how to proceed generally to produce effects that we want; and he argued that to get this knowledge the only way to proceed is to carefully draw and measure every detail of a subject down to the mouldings and ornaments, and even the jointing of the materials. We think that students may have other objects in sketching than this, and that, however useful it may be to make thorough and complete studies from time to time, yet perspective sketching and the noting of details with, at most, only a few general dimensions, have many great and distinct uses, and have the advantage of occupying very much less time; time being, as we have pointed out, generally of paramount importance. We do strongly recommend that every sketch should have a few general dimensions noted upon it, but we think that the making of regular measured drawings is a separate, and in some ways more serious, branch of study altogether, and that it should not be ranked as "sketching" at all; and if this classification were observed, a good deal of confusion and controversy on the subject might be avoided.

Taking all things into consideration, the best kind of sketch is a perspective view in outline, or with a minimum of shading, and, on the back, or round it, or on the opposite page of the book, copious written and graphic notes of whatever is worth noting,—plans and details, dimensions, colour, materials, date, position, and construction,—as well as notes of any ideas which the subject may, at the moment, suggest, whether with regard to restoration or to improvements which might have been introduced or defects in the design or the object of the sketch, and in what way it may be useful; all of which may seem very obvious and easily remembered at the time, but are as likely as not to have escaped the memory a few months, or even a few weeks, afterwards. We do not say, "Make notes on all occasions on all these points," but only upon such of them as may seem worthy of record. It may often happen, in fact more often than not, that one or two of the points mentioned are alone worthy of record, and that the perspective view in particular may well be omitted. If colour is one of the things to be noted, good coloured crayons may sometimes be found useful to give memoranda, and are more expeditious and less troublesome to the inexperienced than water-colours; but the ability to make a rapid water-colour sketch, be it remembered, will be found something more than an ornamental accomplishment. The making of finished water-colour drawings, or of highly finished drawings of any sort, on sketching tours, is a thing to be discouraged as a waste of time, unless, indeed it be done with the laudable object of raising money for another trip by having results to show to unprofessional friends which they can appreciate.

For the sake of avoiding the waste of precious opportunities, it is very desirable that students should have some facility in sketching before going far afield for study, as well as a sufficient knowledge of architecture

to know good from bad, or at least to be able to judge a little what is likely to be worth study and what is worthless. For the latter kind of knowledge, general study and mixing with one's fellow students must be trusted to; for the former, a special effort ought to be made by practising at every opportunity upon buildings within easy reach, or the objects in an art museum, remembering that subjects simple in outline, without much detail, should be chosen for first efforts. We knew a young man who took the flying buttresses round the apse of Cologne Cathedral for his first subject. He was not very successful.

Every expert sketcher has his own method of working, and his own style. The old receipt for learning to throw a fly, and for so many other things, "Watch an expert," is the best to recommend to a tyro. Architectural sketchers are good-natured people as a rule, and no young man ought to have any difficulty in finding an experienced friend to give him a lesson. If, however, he cannot do so, he must do his best to draw what he sees, and as nearly as possibly as he sees it. Let him begin by drawing the leading lines in a series of light dots, marking their terminations and intersections, and keeping the perspective of straight lines and arches clearly in his mind,—a knowledge of perspective being, of course, absolutely essential to the architectural sketcher. These lines must then be drawn in firmly and freely, in single strokes, with as little hesitation and as few breaks as can be accomplished, "painting up" especially being avoided. Before putting any decisive line on paper, we recommend the young sketcher to take a careful survey with his eye of the main proportions of the whole structure he is about to draw, regarding it for the moment *en bloc*, as a mass of a certain size and proportion, and noting carefully the proportions of height to width of the principal parts as they will have to go on the paper. Horizontal or vertical architectural lines may strongly influence the apparent height and width of the stages of a tower, for instance, and convey a deceptive impression at first glance; and if the sketcher puts in the main outlines and string-courses from first impressions, he will often find, when he begins to fill in details, that the whole compartment is wider and lower in proportion than it appeared to the eye. Similarly, a side of a building that is seen in rather sharp perspective is often very deceptive to the inexperienced sketcher; it contains all the detail of the other side, though in a crowded-up aspect, and the beginner is often surprised to find how much he has over-estimated its perspective width, and into how narrow a strip of his paper it has to be compressed. The leading lines are really the difficulty, and the beginner should not be discouraged by any number of failures at first, nor should he tear up his early efforts: they will serve later on to encourage him by showing his progress. This first difficulty overcome, filling in the detail will be all plain-sailing enough. It is a good plan to sketch habitually on a large scale; nothing so much conduces to freedom of style, and it gives the opportunity when occasion arises of showing bits of detail with extra precision and clearness; constant sketching in small note-books cramps the hand and leads to a scrappy and untidy manner.

So long as a sketch shows all that is required of it, and is clear and accurate, much shading and finish are unnecessary,—in fact, the more white paper there is, and the less lead pencil, the better, as a rule. An effort should be made to give every stroke of the pencil a distinct and appreciable value; a few brick or tile lines on the shadow side, if skilfully placed, may be made to express shade and surface for the whole sketch; the lines of a string drawn at the ends, or of an arch drawn at the spring and apex, will readily indicate to the eye their existence throughout, and their omission, at least, where high light would naturally fall, gives an air of brightness and sunshine to the picture of incalculable value to its effect. Carving, if sketched in line, is best expressed almost entirely by shading, the lines of which follow its contours.

Similar principles hold in water-colour sketching; clearness and brightness are the things to be aimed at; the effect should be obtained with as few washes and as little work as may be, and detail indicated by little bits, carefully and accurately drawn, at the points where they will best tell their tale.

It is almost unnecessary to say that, in sketching, the effects of reflected light should be kept in mind, and, without attempting picture-making, there is no harm in an effort to produce pleasant grouping and to give objects their legitimate value with respect to their distance from the picture plane. It should be recollected that a cast shadow is darker than the shadow side (the shadow side getting reflected light from the parts beyond the cast shadow), that the edges of a shadow are darkest to the eye (by contrast with the adjoining light portion), that all dark objects look darker against light ones, that all objects look dark against the sky, that horizontal surfaces are usually lighter than vertical ones, that figures of men and animals generally look dark against buildings, and that light and shade are both strongest and most contrasted in the foreground, and both fade into grey as distance increases. Grouping is too wide a subject to say much about here; the easiest group to manage is a pyramid with something high and marked, such as a tower or gable for a centre, and the other objects grouped round it; this central object should not, however, occupy the middle of the paper, but be a little on one side or the other. In drawing a long building it will often be found that all the main lines of the sketch run down towards one side. This is always unpleasant, and if there is no existing object at the end to restore the balance, it may sometimes be done by indicating a few clouds running in the opposite direction or by putting in an imaginary tree (if it is not out of place) or some other object.

The subject of materials is an important one, especially to beginners, who, above all others, should use the best, in order to give themselves the best chance of producing good work. Old hands may be able to do well, though even they will not do their best, under disadvantageous circumstances of all sorts; but for the inexperienced to be careless in the matter of paper, pencils, or colours, is to court unnecessary difficulties and to lay themselves open to irritating if not disheartening failures. For pencil sketching the paper (for architectural subjects, which alone we are here discussing) can hardly have too fine or smooth a surface, provided it is not greasy or "glazey"; the best surface that could be found is really that of the note-books prepared for "metallic" pencils; firmness to resist the pencil-point and thickness sufficient to resist any tendency to buckling or warping from being worked on are also essential. Most expert architectural sketchers now use thin millboard for pencil sketches as best combining all these qualities, but the sheets are sold separately, and a block of good paper is often more convenient. It is false economy to buy cheap pencils: they constantly vary in hardness and the lead often breaks at critical moments, and from the number of faults in it involves a loss of time (and temper) and a cutting to waste of the pencil, which soon balances the saving in first cost. Pencils for general purposes should be of medium softness: if too hard it is impossible to make an effective line with them, if too soft the point is worn away with the first few touches, and fine drawing becomes impossible. An F or HB may be recommended, but it must depend a little upon the heaviness of the sketcher's hand. We have found a good HB the best in most cases.

The sketcher of buildings should not despise the occasional aid of a small T-square or straight-edge, and he will often find it useful to be armed with a pair of Napier compasses. A two-foot rule and pair of five-foot rods are, of course, essential, as is also a small sketching stool; but cymagraphs and cameras are best left at home. We strongly recommend the use of tube water-colours rather than pans. They sometimes involve a little waste, but that is more than compensated by their remaining always moist. Small hand-palettes are now made for taking squeezes from the tubes for a day's use, as may be required. With regard to colours and brushes we would say again "use the best." Some few very clever people sketch in brown or black ink; it is excellent practice, leads to great clearness and precision, and (as rubbing out is impossible) it obliges the sketcher to consider carefully every line before drawing it *; but, to avoid smudging, it is necessary to work from one corner of the paper to another, instead of bringing every part forward together, and it lacks the freedom of pencil.

Much has been said, and much remains that might be said, about the pains and pleasures of sketching. We believe that few who have experienced them will regard the former as in any sense equal to the latter, and we strongly recommend those who have no experience to gain it at once.

In conclusion, let us give the tyro one piece of advice. Do not let the crowd, which is sure to gather round every sketcher, annoy you. It is seldom ill behaved, and generally too much interested to be so; if, in their eagerness to see, some persons are rude enough to get in front of you, a shout from the rest is the common result, and always effectual; if it does not come, a good-humoured protest is the best remedy. We have only known it fail twice, and on each occasion the indignation of the other bystanders was sufficient to make the offender humble at once. It is, of course, not pleasant to be overlooked by a crowd, but it is, after all, very complimentary, and the sketcher should lay that flattering unction to his soul, and try to enjoy his popularity.

* When sketching with ink it is well to first lightly dot the principal points, as a guide to the eye in filling in the lines.

DISPUTES BETWEEN BUILDING SOCIETIES AND THEIR MEMBERS.

WE are supposed to be a practical people, but in many respects this cannot truly be said of us. Certainly, in regard to our legislation, it would be difficult to be less so. The legislation as to building societies well exemplifies this. A subject cannot be named on which it is more advisable that legislation should be clear and uninvolved; but, in the course of the present reign, there have been four Acts of Parliament passed on this subject, all of which are more or less still in force. The latest was passed in 1884, and it might not have been unreasonable to suppose that, instead of adding another amending Act to those already in the statute book, the occasion would have been seized to pass a single Act amended up to date. But nothing of the kind was done; on the contrary, the first section informs the reader that the Act in question is to "be construed as one with the Building Societies Act, 1874, the Building Societies Act, 1875, and the Building Societies Act, 1877." Such legislation as this on a subject of importance to large numbers of persons should not be continued for a day longer than is possible. These Acts should all be repealed, and the law relating to Building Societies should be compressed into one statute clearly drawn up. The subject is one which may reasonably be commended to the notice of the new House of Commons. It is in no sense a party question, and there can be little doubt that if a few large Building Societies were to urge the necessity of a clearing up of the law upon a few members of Parliament the subject might be treated of in a single clear and explicit Act of Parliament. The Act of 1884 contains but a single operative section, and its intention was to put an end to the continual litigation as to the meaning of the word "disputes" in previous Building Societies Acts, so that there might be no question as to what differences were or were not to be submitted to arbitration. It says, "the word disputes in the Building Societies Acts, or in the rules of any society thereunder, shall be deemed to refer only to disputes between the society and a member, or any representative of a member in his capacity of a member of the society . . . . and in the

absence of such express provision such express provision shall not apply to any dispute between any such society and any member thereof or other person whatever as to the construction or effect of any mortgage deed or any contract contained in any document other than the rules of the society, and shall not prevent any society or any member thereof . . . . from obtaining in the ordinary course of law any remedy in respect of any such mortgage or other contract to which he or the society would otherwise be by law entitled." To discover what are disputes between a society and "a member in his capacity of a member," it is necessary to consider the legal decisions previous to the Act, because it must be pretty apparent that this definition is no real definition. Again, it is evident that the latter part of the section is not clear; for, as Mr. Justice Stephen observes in the case of the Western Suburban and Notting-hill Permanent Benefit Building Society *v.* Martin (why, by the way, should these societies take to themselves such absurdly long names?), which has been lately decided, "such" is certainly not correctly used. It is odd, indeed, that an Act so short as this could not be properly worded. That action was one by a society for instalments due under a mortgage deed, and the only question in dispute was whether the society had given credit for certain payments which it was alleged had been made in respect of the principal sum advanced. The question then arose whether this was not a dispute which should have been referred to arbitration. We do not propose to go into the elaborate judgment of the Court: it is sufficient to state that it was held first of all that a dispute between the society and a member in regard to a mortgage was one between it and him in his capacity of member, unless it was in regard to the effect and construction of the deed ltself. This was not a dispute either as to the construction or effect. Next it was held that the word "such," in the latter part of the section, did not, as was urged by the society, refer to *any* mortgage made between the society and a member, but only to one in regard to which there was a dispute as to its construction or effect. This decision as to the action for moneys under a mortgage deed not being maintainable is in accordance with the decision of the House of Lords in 1884 in The Municipal Building Society *v.* Kent, a decision on rules under the Act of 1874. Thus we may take it that it is quite clear that only disputes strictly speaking in regard to the construction and consequent effect of a mortgage deed will be allowed to form the subject of a legal action by or against a Building Society. The policy of the Legislature has been to make societies and members refer their disputes to arbitration, and the desire of the judges has been to carry out this intention, and not in any way to obtain for themselves a jurisdiction which it was not intended that they should possess. Thus it has been held that an action by a member against a society and its directors, alleging misconduct on the part of the directors with the object of obtaining a decree that he was not bound by the rules, is one which should be referred to arbitration. Indeed, the whole current of legal decisions, of which there are many, shows that litigants will receive no encouragement from the judges, but that their disputes will be sent to arbitration. This is as it should be; nothing can be worse for a Building Society, both generally and pecuniarily, than to go or be dragged into the Law Courts. We are by no means sure that even the construction and effect of a mortgage deed might not well be referred to an arbitrator when a dispute arises on it, subject to an appeal by way of special case to the High Court. This would not often be necessary if a competent lawyer were selected as arbitrator, and if an appeal did become necessary the machinery of a special case is as satisfactory a kind as can be found.

The National Association of Master Builders.—The half-yearly meeting of this Association will be held on Tuesday the 27th instant.

NOTES.

ONE result of the late General Election is clear. The reform of the Government of London is relegated to the dim and distant future. The immense preponderance of Conservative members returned by London will clearly be a complete barrier to any large scheme. We are inclined also to think that the division of London into a number of Parliamentary divisions is calculated to foster local feeling, and will thus be an influence working against the establishment of a single municipality for London. It is curious to contrast the grumbling which goes on against the local bodies of London with the apparent absence of any enthusiasm among the electors at Parliamentary elections for a municipality for London.

THE Richmond Vestry have at last taken the decisive step, so far as their powers extend, towards the purchase of the estate of the Duke of Buccleuch at Richmond. They have applied to the Local Government Board for sanction to borrow 30,000*l.*, the sum asked by the agents of the Duke. A provisional agreement has already been entered into between the agents and the Vestry, by which the latter authority agrees to pay the above sum on condition that the borrowing of the money is sanctioned by the Local Government Board. The Vestry have resolved to apply to the Corporation of London for a grant in aid of the purchase; but it is understood that several members of the Common Council have expressed themselves unfavourably regarding the proposed grant; failing evidently to see the transaction in the lights of the Richmond Vestry, that it is one of Metropolitan, if not national interest. The principal argument adduced in favour of the purchase is, of course, to preserve this beautiful estate from the "inroads of the ruthless builder." There seems to be, however, judging from the expressions of opinion at the meetings, a considerable section of the inhabitants who object to the purchase, not only because of the sufficiency of recreation grounds already in the vicinity of Richmond, and the existence of high rates, but because it is the very kind of estate which they think should be built upon with properties of a high rateable value, which would add a considerable quota to the rate fund of the town. The Richmond Vestry has just applied for sanction to borrow 96,000*l.* for a drainage scheme, and it is natural that some of the ratepayers should regard with anxiety this proposed further increase of their financial burdens. It is, however, a matter of real interest, not only to Richmond, but to Londoners and visitors to London generally, that one of the most beautiful scenes on the Thames should not be spoiled; and we hope this view of the scheme will not be overlooked by the public bodies who are asked to contribute to so desirable an object.

THE interest which is riveted on the electoral returns has prevented that attention being given to the railway returns for the half-year which they certainly deserve. On twenty principal lines of the United Kingdom 540,000*l.* less has been received in the first half of 1886 than in the corresponding period in 1885, which had shown a reduction on 1884. It does not follow that the net earnings of the shareholders will be decreased by this amount, which is equal to about 2 per cent. of gross revenue. Economies in working, no doubt, will be shown on the *per contra* side. But then a larger capital will be entitled to interest than was the case in 1885. A few weeks will tell how each of the great lines is affected by this twofold change. But it is evident that dividends cannot increase, and that, in many cases, they may decline.

ABOUT six months ago a public meeting was held at the Mansion House, under the presidency of the Lord Mayor, Alderman Staples, F.S.A., to consider certain suggested improvements eastwards of St. Paul's Cathedral, consequent upon the removal of St. Paul's School to Hammersmith. An influential committee was nominated at the meeting with instructions to examine into and report upon the possibility of arresting any further progress with the buildings that were already in course of construction upon the site under debate. We do not know whether any report has been presented by the committee, or to what extent they found themselves able to pursue the inquiry which was entrusted to them. This, though, is certain,—the new buildings are rapidly approaching completion, so that the question of clearing the ground at the Cathedral's eastern end is, for some time to come, entirely closed.

IT is satisfactory to find, from what Professor Fream stated at a recent conference at South Kensington, that our Colonies have arrived at a very practical understanding as to the absolute necessity for preservative laws for their forests, one of the most valuable of all colonial resources. In Australia, especially, where trees used to be cut down in the most reckless and wasteful fashion, a strict and wise system of conservancy has taken place, with the happiest financial results to each colony. In New South Wales 5,390,513 acres are set apart as timber reserves, and the balance of gain between 1877 and 1884 was over 10,000*l.* In Victoria the revenue for 1883 from woods and forests was 8,580*l.*, while the expenditure was only 2,538*l.* In South Australia the forest revenue balances expenditure, with 150,000 trees added to the colony. In 1884 the Commissioners distributed 200,000 young trees at the cost of a halfpenny each. Queensland maintains twenty forest rangers, who have to look after 1,572,752 acres of timber reserves, while New Zealand, last but not least, has just established a Forestry Department. The Cape shows equally satisfactory results, a million of young trees being annually distributed gratis, and it is calculated that the forest revenue will soon mount up to 250,000*l.*,—the sum which leaves the colony every year for imported wood. Most noteworthy is the rapidity with which the State investments for forest conservation become of a paying character.

THE historic properties which depressed times have driven into the market within the last few years, have been unusually numerous and important; but none have been of such interest and magnitude as that of Houghton, one of those great mansions that one occassionally meets with in England, too large to be inhabited, except by the possessors of a colossal fortune,—and these, now-a-days, are few and far between. Such a man, however, was Sir Robert Walpole, the famous Earl of Orford, who, like the late King of Bavaria, spared no money, whether his own or that of other people, to gratify his building tastes. He certainly got a huge edifice for his outlay, massive and incongruous, according to the heavy taste of the age,—an enormous square, with four cupolas flanking the roof at each corner, and a façade surmounted by a statue of Demosthenes, while the wings on each side were connected with the main body by semi-circular colonnades. A good deal of dignity was given to the east and west fronts by fine flights of steps, but this ornament was not allowed to remain very long, proving too tempting a bait for the gambling propensities of the great Earl's grandson. Having played away everything else, he tossed for his steps and lost, having also to pay for their removal to the mansion of his antagonist, a neighbouring Norfolk squire. The interior is remarkable for the profusion of carved woodwork and gilding, the vast expense of which may be estimated by the fact that a single mahogany gilded door in the drawing-room cost 1,000*l.*, and that this was only one out of a hundred or more. Everything is in keeping with this lavish outlay, even the stables being sufficient for a hundred horses. From Kent we hear the announcement of the intended sale of Saltwood Castle, near Hythe, which as, far as antiquity goes, has far higher claims than Houghton, for it was granted to Canterbury in 1026, for the support of the monks, and

was the rendezvous of the conspirator knights who planned the assassination of Thomas à Becket. The principal features of the fortress, which has been carefully restored of late years,* are the round towers and entrance-gate, a beautiful example of fourteenth century work. As comparatively little land is attached to Saltwood, it will probably be much more likely to meet with a purchaser than Houghton, which has over 17,000 acres. The experiences of auctioneers in selling landed property are very unfortunate just now, as witnessed in the recent Cornish sale at Boscastle, and the more fruitless one of the Jervaulx Abbey estates in Yorkshire.

THE discovery has been made at the Peiræus of a subterranean vaulted building, which apparently served the purpose of a reservoir. Its area is stated to be 14·30 square mètres, and the depth, so far as at present excavated, 16 mètres. The reservoir is approached by eight steps, which are hewn out of the rock; the vault of the building is supported by four columns, of which three are hewn out of the rock and the fourth is built up of excavated blocks of stone. A short account appears in the Δελτίον (No. 493).

THE Yaldham estate, near Sevenoaks, is advertised to be sold by auction by Messrs. Farebrother, Ellis, Clark, & Co. on the 22nd of July. The manor of Yaldham, formerly called Ealdham, was the property of a family of the name of De' Aldham in the twelfth century. Sir Richard De' Aldham was with Richard I. at the siege of Acre in Palestine. In the reign of Richard II. Martin Peckham married the heiress of Sir Thomas De' Aldham, and acquired the manor by right of his wife. He resided at Yaldham, where also his successors resided for several generations, until about 1733, when the estate was sold to William Evelyn Glanville, in whose family it at present remains. The house has been recently restored and repaired: the hall, which is 32 ft. long and 24 ft. wide, retains its original open-timber roof of the thirteenth century in perfect preservation, and an oriel window with the arms of the Aldham and Peckham families in stained glass of the fifteenth century.

THE City of Venice having resolved to erect a colossal statute of King Victor Emanuel, the sculptor Ferrari was commissioned to prepare a design for that purpose. Great difference of opinion existed as to the site most suitable for the purpose, and it was ultimately resolved to erect a model of the statue in the Piazzetta Leoncini, near the Piazza of St. Mark. This was done, the ancient well, with its group of lions, from which the piazza takes its name, being removed for the purpose, not without some protest on the part of the more artistic portion of the population, who asserted that the removal of the well was unnecessary. The site being found unsuitable the model was removed, but the ancient well has not been restored to its place, and it is now stated that a fountain of modern design will replace the characteristic well, which is familiar to most tourists. This seems a gratuitous piece of folly and extravagance at a time when Venice is suffering from deep commercial depression consequent on the recent outbreak of cholera, and it is to be hoped that the proposition will not be carried out.

A CORRESPONDENT writes:—"Whilst smallpox is ominously and insidiously moving about Windsor, and has at last reached the outskirts of the Castle, there is still no sanatorium. Sooner or later the Royal Borough will suffer for this oversight by being overtaken by some irretrievable disaster. The improvements that were to mark the year of jubilee, that were to give human homes to the poor, are making no sign at all. In a word nothing is being done to rescue Windsor from the reproach of its slums. Bier-lane, which is in close proximity to the Castle, which was condemned by your special Commissioner in 1871, is still a cause of sanitary and moral danger and a national as well as local offence. The Windsor slums have been denounced by all competent authority, but even in this age of progress they are likely to outlast the fiftieth year of Queen Victoria's reign." We very much regret to hear of this discreditable stagnation of sanitary reform in Windsor.

* Views and plans of the restoration will be found in the *Builder* for August 22 last year.

THE ways of contractors and of Local Boards are past understanding. A case of Pickthall and Others *v.* The Merthyr Tydvil Local Board came before a Divisional Court of the Queen's Bench Division on July 12. The dispute arose out of a contract by the plaintiffs to make a reservoir for the defendants. It was agreed by the contract that if a dispute arose it was to be referred to the Clerk of the Local Board! That is to say, to the very person who strictly would be the advocate of the Board or would be instructing counsel on their behalf. A more preposterous piece of folly on the part of the contractors it would be difficult to imagine. Disputes did arise, and the contractors desired to refer them. The Board refused. The contractors then brought an action. Then the Board applied for an order to refer the dispute to their Clerk. Here, again, was a piece of folly, this time on the part of the Local Board, first in refusing arbitration and then in pressing for it,—of course necessitating expensive legal proceedings. The Court would have nothing to say to the proposition that the dispute should be referred to an officer of the Board. They suggested it should be referred to an impartial third party, and the case stood adjourned for such a person to be selected. We have over and over again pointed out the stupid way in which contractors bind themselves in contracts. But we could hardly have expected to find an instance of such folly as this case discloses.

ANOTHER indignant correspondent, justly observing that we "are always ready to expose the system of bribes and commissions," sends us a circular just received from one Mr. Hood (we will not further advertise him by giving his trade address), who calls attention to the fact that he has taken new premises as a builder and decorator, and obligingly affixes a special memorandum to this effect:—

"Dear Sir,—Should I be successful in securing any contracts through your introductions I will allow the usual liberal discount."

This document, be it observed, has been addressed among others to an architect who holds an important official position in the neighbourhood in which the ingenious Mr. Hood flourishes (or wishes to flourish), and who naturally wants to know what is this "usual liberal discount" of which he is supposed to be cognisant, and suggests that "the sooner these insulting circulars can be put a stop to the better for all parties." We have done what we can to put a stop to them,—a fact which is recognised, we observe, by the Editor of *Truth*, who recently made a very uncalled-for attack upon the members of the architectural profession on this head, as if *they* were the culprits, and who seems to think the Institute of Architects are indifferent on the matter. Mr. Labouchere is quite mistaken there, as he would find on inquiry. However, we are glad, at least, that he recognises our position in regard to this practice, and we will, on that score, even condone his benevolent reference to us as a "trade journal." It is true that we did receive a letter one day from a contractor, objecting that the *Builder* did not bear out its title, inasmuch as it contained many matters that were not of interest to "builders." But Mr. Labouchere, as a "man of culture," might have been expected to appreciate a little better the extent of the ground covered by the comprehensive Saxon word "builder."*

Streatham.—Mr. Frederick Arnold is about to publish, through Mr. Elliot Stock, an illustrated "History of Streatham." The volume will also give an account of the parish of Estreham and the manors of Tooting Bec, Leigham, and Balham.

* *Vide* our bi-annual title-page.

MACHINERY AT THE COLONIAL AND INDIAN EXHIBITION.

CONSIDERING the splendid array of raw materials to be seen at South Kensington, the exhibits of machinery used in their conversion are small,—in point of fact they are confined to Canada. Enough is, however, to be seen to convince the visitor that that country is now almost entirely independent of the mother country for the supply of all ordinary engineering plant. Some of the machines shown,—notably amongst those for wood-working,—exhibit very considerable excellence both in design and workmanship, and would do credit to this or any other country.

The electric lighting of the gardens and buildings is more elaborate than last year; the former is undertaken by Messrs. Galloway, of Manchester; and the latter by Messrs. Davy, Paxman, & Co., of Colchester. The engines employed by Messrs. Davy, Paxman, & Co., are chiefly those used at the last exhibition. Messrs. Galloway, however, have erected a number of horizontal compound engines of a somewhat new type, in which the cranks are placed opposite to each other, or, in other words, the engines balance each other, consequently that *sine-quâ-non* of effective electric lighting, viz., great steadiness in running, is secured. The expansion gear with which the engines are fitted is now automatic, but is regulated as occasion may require by means of a hand wheel. The governor gear is of the parabolic type. The engines are generally of very massive construction, and the bed-plates are cast in one piece. The fly-wheels are fitted with barring gear for starting, worked by means of a hand winch, but when the engines are set in motion by the steam this gear is automatically thrown out of action. The dynamos employed are of the Elweil-Parker and Brush type. Altogether it is, we believe, generally admitted that the engines,—indeed the installation generally,—is decidedly in advance of anything yet carried out in electric lighting.

A small but very satisfactory collection of wood-working machinery is shown by Messrs. McGregor, Gourlay, & Co., of Galt, Ontario, Canada. Amongst these is a flanged pattern band-sawing machine, carrying 36 in. saw-wheels, which presents in its construction several features of interest. The top and bottom saw-wheels run in double bearings; the top bearing passes through the main frame of the machine, and is raised and lowered by a hand wheel and screw, with a lever-and-weight arrangement to allow for the expansion and contraction of the saw. The table is made to cant for bevel sawing by means of a very neat arrangement, consisting of a hand wheel and worm, working into a toothed quadrant attached to the under surface of the table. This is an improvement over the ordinary plan in vogue in this country, as no bolt has to be slackened, neither has the table to be held by hand till re-fixed. The saw-blade runs in an adjustable guide, fitted with a counter-weight for rapid manipulation. The saw guides which receive the back thrust of the saw consist of adjustable steel rollers running in self-lubricating brass centres, which is a better plan than that usually employed. The machine is fitted with a fence for straight sawing, pulley brake, striking gear, brush for keeping wheels clean, &c. The main frame appears to us rather light, and we certainly do not admire the decoration of it, consisting of paintings of a stork, bear, &c., which, to say the least, are incongruous; but, taken altogether, this machine is decidedly worthy of praise, the details having been well thought out, and the workmanship being all that is required.

A steam mortising machine, suitable for joinery work, is also to be seen here. In this machine the driving pulleys are placed on the top of the main column, and the table carrying the wood is brought up to the chisel by means of a foot lever. When the table is lowered to its lowest point, the chisel makes a complete half revolution, so there is no danger of striking the wood crosswise as the chisel is reversing. The motion for reversing the chisel is simple and automatic in its action. The table is arranged with compound movements, and can be set to mortise at any angle. The driving pulleys are fitted with an outside bearing. For light mortising this is not at all a bad machine. A very neatly-designed surface planer and wood-worker, with one or two fresh features about it, is also shown here. It is mounted on a solid

box frame; the tables are arranged with simultaneous or independent adjustments, and fitted with angling fence and pressure springs. The cutter-block spindle is of steel, running in long self-lubricating bearings. One of the bearings and the pedestal are made adjustable laterally by means of a hand wheel. By this arrangement the workman is able to have an assortment of cutter-blocks, and put them on or remove them from the spindle without pulling the machine to pieces. This is a distinct improvement, and one which our manufacturers would do well to note. The cutter-block, too, is adjustable laterally. The operator is thus enabled readily to bring it to the exact line of his work. The only other machine exhibited by this firm is a panel planer of substantial design. The cutter-block and spindle is of forged steel running in extra long bearings,—a very good feature for high-speeded machines. The pressure bar is mounted on a trunnion, and is arranged to swing in a circle round the cutter-block. All the feed rollers are geared, and there is an especially slow-feed for rough or knotty wood. Taken altogether, the exhibits of this firm are worthy of high commendation.

Messrs. McKechnie & Bertram, of Dundas, Ontario, exhibit a four-cutter moulding machine of the outside type, but the top cutter-block is supported by an outside bearing. We noticed the cutter-blocks on this machine were made of gun-metal, with T-shaped slots for fastening on the cutters. The use of gun metal is certainly better than cast iron, and there is less liability to fracture, but we should imagine the cutter-bolts would much sooner work loose. A good feature in this machine, as in most of the others exhibited, is the extra long bearings used. We are at a loss to understand, however, how it is that the cutter-block for finishing the under side of the wood is placed at the extreme end of the machine, and comes into play after the side-cutters have operated. This is quite contrary to English practice, the cutter-block for dressing the under side of the wood being invariably placed at the other end of the machine, so that it can operate first on the wood, and thus give it a smooth and steady base for the other cutters to work on. This firm show also a panel-planing and thicknessing machine, also a band-sawing machine, but they do not possess any particular feature of novelty.

The Hamilton Manufacturing Company, of Peterborough, Ontario, have in motion one of Covel's Patent Automatic Saw-sharpening Machines for circulars and mill webs. The sharpening is done by an emery wheel in the usual way, but when the saw is once fixed it requires no further attention till completed, an automatic catch motion bringing forward one tooth after another, till all are completed. An additional advantage in this machine is that the depth of gullet and sharpening of each tooth is absolutely the same,—a result quite unattainable in machines guided by hand. Any desired depth of gullet or rake on tooth can be obtained at will. This machine can be used for sharpening large band-saw blades, and, taken altogether, it must be pronounced one of the most interesting machines in the Exhibition.

A very useful saw-hammerer's table, fitted with anvil, swage, hammer, and other necessary equipments, is also to be seen here, together with a powerful saw swage for "upsetting" or spreading the points of saw-teeth, —a method of saw-setting largely pursued in Canada and the States, it being claimed that the action of the swage strengthens the points of the teeth; the swaging being done from the face of the teeth, they are given a wide spread, thereby supporting the corners.

Messrs. Cowan & Co., Galt, Ontario, exhibit a double tenoning machine, which has one or two interesting features about it, although it is not very striking either as regards design or workmanship. The cutter-block spindles are driven by an in-and-out belt, the tension being regulated by an automatically adjustable idler pulley, which is mounted on a vertical slide fitted with rack-and-pinion movement, with wheel and rope and counterweight to take up the slack in the belt. The main cutter-blocks carry four cutters, which are arranged to come into action spirally. The cutter-spindle bearings are long, and lined with Babbitt metal, after the American fashion; there is little to be said, however, in favour of this practice, which is rarely, if ever, seen in Europe. A fret-saw driven from below, and fitted with suspended tension springs, is to be seen here, also a very tall steam mortising machine driven from above. The wood is brought up to the chisel by the foot, after the fashion of the machine already described.

The James Smart Manufacturing Co. have a selection of small labour-saving tools, including lifting jacks, tire-benders, horizontal and vertical wood-boring machines, paint-mills, &c. They are fairly well made.

Messrs. Inglis & Hunter, of Toronto, show a well-finished 100 h.-p. horizontal engine, of the trunk type, fitted with Corliss valve gear; also a Westinghouse patent three-cylinder engine. The main frame of the Corliss engine is of massive design, and the details generally are simply and well arranged.

There is a large selection of threshing, reaping, mowing, and other agricultural machinery; but, as far as we could make out, only one portable engine, which was exhibited by Messrs. A. D. Sawyer & Co., of Hamilton. To English eyes this appears a very uncouth specimen indeed, but it probably meets the necessities of the country, or it would not be manufactured after the fashion it is. The boiler is of the return tubular type, short in length, but of large diameter, and the fire-box is entirely surrounded by water. A steam dome is attached to the boiler, a feature never seen in this country in portable engines.

The Hart Emery Wheel Co., of Hamilton, show a selection of Emery wheels and grinding machines, including a neat little tool known as Rogers's patent circular saw filer. In this machine the saw to be sharpened is mounted horizontally on an adjustable bevelling chuck, which can be set to angle so as to present cross-cut and other saws at the right bevel to the Emery wheel. The Emery wheel is mounted vertically on a horizontal spindle; a stop fitting into a gullet of the saw teeth is provided to keep the saw steady when under the action of the Emery wheel. The saw is advanced to the wheel by a hand lever. We noticed that the ordinary Hart grinding machines for metal-working and other purposes are fitted with cone pulleys, so that as the wheels wear down in diameter their speed can be increased. This is an improvement, as it is found in practice that, unless the speed of the wheels at the periphery is kept up to a certain standard, the wheels wear out more rapidly as they decrease in size, and their cutting powers decrease in ratio. A novelty in the construction of the Hart Emery wheels consists in the insertion into the wheel of a brass wire web,—the object of this is to prevent accidents to the wheel as far as possible by preventing breakage and by holding the cracked or damaged parts together. Several wheels were in motion at this stand, and their cutting was all that could be desired.

The Dodge Wood Pulley Company, of Toronto, exhibit a novelty, or perhaps we should say a new application of a very old idea, in the shape of a wooden split driving pulley. These are made of poplar, built up in segments, and are fastened to driving shafts by compression of the boss. When used as loose pulleys they are fitted with metallic bushes. There is no doubt whatever that wooden pulleys afford a much better grip to the driving belt than iron, and are less than one-half the weight, an important consideration where large numbers of pulleys are fixed on one shaft, running at a high speed, as in saw-mills or joinery works. One reason why wooden pulleys have not been much used in this country hitherto has probably arisen from the fact that none built on what may be called scientific principles have been placed on the market. The pulley under notice has several features of interest in its construction; the rim is built up in segments, glued, nailed, and dowelled. The rim, after being turned, is cut in halves transversely; the arms are secured to the rim by means of dovetailed joints; the parts of the arms are so placed in the ring segments that they will not touch each other, and when the boss or hub of the wheel is bolted on to the shaft a very strong adhesion is secured by compression. The inventor claims that it has been proved by absolutely public trials made by the Franklin Institute, Philadelphia, and others, that the "grip" of a well-made wooden pulley is enormously in excess of an iron one. Comparing the grip at 100 lb. slack tension with that of the same side of the same belt on a turned cast-iron pulley the figures given are as 20 to 4·24, or, practically, as 100 to 17, or about six to one in favour of the wooden pulley. Even if we take these figures *cum grano salis*, the manufacturers appear to have made out a case for a full and fair trial of their invention by machinery users, and we shall expect to hear further about it.

The Commissioners of Railways for New South Wales exhibit in the grounds specimens of Cowdery & Thomas' Patent Rails, and the trucks fitted with their automatic couplings. These rails are formed of two separate rails of the same transverse section fitted together at their heads, making together one rail of neat appearance. The chairs which support the rail are of somewhat novel shape, and support the rails immediately beneath the heads. The fastenings to keep the rail and chair in position are few and simple. In place of the ordinary wooden sleepers, steel sleepers of hollow section are used. Without seeing these hydra-headed rails in absolute service under the severe and varying conditions found on a railway, we cannot well pronounce an opinion as to their increased utility over the rails in ordinary use; on a casual inspection, however, we must confess we were favourably impressed by their simplicity and apparent practicability. The automatic couplings are ingenious, and consist briefly of a shackle on the one truck, the end of which, when the buffers of the trucks are brought together, acts on a revolving catch, shaped after the fashion of a cam; after ascending the cam, and passing the point of it, it becomes locked. So long as the trucks are of the same size, and both loaded or unloaded, it would probably act all right, but given one truck loaded,—the one with the catch,—the other empty, or one truck lower than the other, we think it would run a very great risk of becoming uncoupled when in actual work; at any rate, with revolving catches, as here shown, for the loaded truck would be much lower than the empty one, and the shackle would easily "lift" over the point of the catch, even if it coupled at all; we think counterweights on the side levers would be an additional protection against uncoupling, especially after the apparatus had been in use some time. Altogether, we much prefer the inventors' patent rails to their couplings.

A gold quartz crushing mill has been erected on the south promenade for the Queensland Commission by Messrs. John Walker & Co., Limited, of Maryborough, Queensland. It can be seen in daily operation, and consists of a five-headed battery with stamps of the usual gravitation type arranged with a drop of 9 in., and striking eighty blows per minute. The operation of crushing and washing is sufficiently interesting, and is briefly described by the exhibitors as follows:—"The gold ore intended to be crushed is first broken into small pieces, and then fed into the battery through a hopper, whence it passes under the stamps, and being crushed is carried by a stream of water through gratings of 240 holes to the square inch over a series of mercurialised copper plates, and through the centre-board wells over four ripples. From the tables it is carried by the water over a concentrator of the percussion pattern. The concentrated pyrites are fed into a "boss" grinding pan, and delivered thence into the Berdan grinding and amalgamating pans, the pulp from which enters a 7 ft. settler pan, which is the finishing part of the operation." Five hundred gallons of water are used per hour, and mercury is used throughout the whole process as the amalgamating agent, sodium being employed at regular intervals for quickening the action of the mercury and preventing its "flouring." The mill and its surroundings are well designed, and well and substantially made, and reflect much credit on the manufacturers. The foundations are made of Queensland ironbark timber.

The Ontario Pump Company, of Toronto, show in motion a selection of Halliday's windmills and pumps, especially designed for supplying villages and farms, &c., with water, and for drainage and irrigation purposes. The windmill is of the sectional wheel type, and is self-regulating, by means of weights acting on the centrifugal principle, or after the fashion of the governor-balls of a steam engine. The action of these weights causes the sails of the mill to present less surface to the wind, as its velocity increases. Should a gale arise, the sails are immediately furled, and the wind is allowed to pass through the mill with very little surface resistance. The speed of the mill may be increased or decreased by changing the size of the regulating weights; thus light weights, having less power to furl the sails, will allow the wheel to run faster, and *vice versâ*. The regulating gear has direct connexion with each

sail, and, in point of fact, is both ingenious and practical; it is, without doubt, the best and most important feature in the mill. It is arranged, by means of a back fan sail, always to head directly towards the wind.

These mills can be placed on a tower or the roof of a barn, and the pump or other machinery is placed immediately beneath them, connexion being made by means of a vertical shaft, sleeve-box, swivel-box, sliding box, and connecting rod arranged in such a way that the mill can turn and head to the wind without throwing the pump out of gear. For irrigation and for supplying farms and villages with water, steam power is, as a rule, much too expensive, and it has been a matter of some wonder to us why wind power has not been much more largely used than it is for these and similar purposes. It is, of course, an extremely economical power, but has the disadvantage of being intermittent; this, however, may be got over by having horse or hand gear for working should the wind fail for several days together. The mills under notice when pumping into a tank can be arranged to shut themselves off when the tank is full, and set themselves going again when water has been used from the tank; in point of fact, they appear complete and practical in all their details, and reflect much credit on their manufacturers. They are not surpassed by anything we have seen in this country.

In concluding our notice of the machinery, we would call the attention of the Canadian Commissioners to the almost entire absence of printed matter, which renders the description of the exhibits much more tedious, and at the same time destroys to a considerable extent the chances of doing business.

THE TOPOGRAPHICAL SOCIETY OF LONDON, AND VISSCHER'S VIEW OF 1616.

TRUEWIT.—Marry, your friends do wonder, sir, the Thames being so near, wherein you may drown so handsomely; or London Bridge, at a low fall, with a fine leap, to hurry you down the stream; or such a delicate steeple in the town as Bow, to vault from; or a braver height, as Paul's.—*Ben Jonson*, "*The Silent Woman*," ii. 1.

WROUGHT with skilful hand, the London of our dramatists should form one of the good books which still remain to be written in illustration of the town's non-political history. Let us take, for example, three authors at least of a period precedent to the Restoration. Many a familiar episode in Shakspeare's historical dramas has London for its scene. In London, Massinger lays the entire plot of his "City Madam." Not a few of Ben Jonson's principal plays, such as, "Every Man in his Humour," "The Silent Woman," "The Alchemist," "Bartholomew Fair," "The Magnetic Lady," "A Tale of a Tub," "The Staple of News," "The Devil is an Ass,"—all have London as the place of their enactment, and contain countless references to the buildings and localities of their day. Nor, indeed, does our parallel end here. Each of the authors we name, the resources of his early manhood having been either dissipated or withheld, turned to the London stage for a means of livelihood; and this at a time, be it noticed, when the popularity of histrionic performances had at length become so assured that houses were specially erected and reserved for their representation. In London one of them held property, and acquired an easy fortune; his two less successful fellows found burial within its limits.

The map, then, before us shows what London was as known to such men as these, who did so much to keep alive its pristine traditions and memories. The Topographical Society have just issued to their subscribers a copy of C. J. Visscher's panoramic view of 1616. The drawing is reproduced, in four sections, by the Typographic Etching Company. The original covers less ground than does the Wynegaarde view of some sixty years before; and is set out to a smaller scale. But it presents considerably more detail, whilst the perspective elevations are much more carefully and closely executed.* J. Hondius published this view, as also another issue thereof in 1620. We are informed, too, that Mr. Halliwell-Phillipps possesses another copy of a date perhaps even later. There is also an etching of it, in facsimile, of 1848, by J. Pullam. Nevertheless, it is a mistake to believe that to Visscher we owe the last delineation of the city before its destruction by the Great Fire. For in the interval Hollar made his (first) view of 1647; whilst of others may be instanced one in Norden's "Speculum Britanniæ," edit. 1653; J. Moor's, of 1640; J. Porter's, 1654; and Faithorne's engraving of Newcourt's Survey, 1658. The Dutch maps are, for the most part, of dates posterior to the Fire; yet the first edition of Augustus Ryther's was engraved and sold at Amsterdam by Cornelius Dankerts in 1604.

Our readers will remember with what complacent pride Sir Roger de Coverley regarded Wren's handiwork as he took boat at Temple stairs for the new Spring Gardens, Vauxhall. In our artist's time the City churches were less conspicuous as a body for the height and proportions of their steeples and towers. But the once lofty tapering spires of the Exchange, "the Dutch Church" (Austin Friars), "St. Hellen," "St. Dunston-in-the-East," "Alhallowes Berking," and "St. Laurence Poultney," that came before Visscher's pencil, have not their equals now. The crown-like cupola of Bow Church (whence some would derive its name), together with the two turrets of, as we take it, St. Andrew, should not be overlooked. Above all stands pre-eminent "S. Paules Church,"—"that sacred pile so vast, so high," as sung by Denham in his "Cooper's Hill." For this "aspiring mountain or descending cloud," the poet had presaged immortality :—

> "Now shalt thou stand, though sword, or time, or fire,
> Or zeal more fierce than they, thy fall conspire."

He lived to see the ruin of his theme completed, and shortly before his death was engaged as the King's Surveyor-General at the building of the new cathedral. We here see it, as yet undisfigured by Inigo Jones's fine but incongruous Classic portico, albeit bereaved (by lightning) of the spire which, together with its former pinnacles, the Fleming, Van den Wyngaarde, portrayed in, say, 1550. The "Eell schipes," with their water-baskets, moored in mid-stream over against the Three Cranes (that is, accepting the perspectives as shown), must now be looked for below bridge, off Billingsgate, or at Thames Haven. The Bankside theatres are represented by the Swan, the "Beare Gardne," and the Globe. This last should be the second erected on that site, for the Globe of Shakspeare and Burbage was destroyed by fire on the 29th of June, 1613; and, as the story goes, through the thatch becoming ignited at the discharge of ordnance during the performance of the former's "King Henry VIII." Opposite to the Stilliarde (Steel Yard) lies the Gallijfuste, a four-masted ship, gaily trimmed with pendants, the standard, and our then national flag, or "Jack," the cross of St. George. The delineation of the Bridewell Dock and the Fleet's mouth should be compared with that of the same locality by Samuel Scott (1770) in the newly-opened Art Gallery at Guildhall. Scott's painting shows Dr. Sacheverel's house by the riverside: a reconstruction, doubtless; for *teste* John Overton's map, 1666–7, this particular quarter did not escape from the Fire.

Since their foundation in 1880 this society have given nothing to the world beyond three old maps. These comprise the one under review, Antony Van den Wynegaarde's, and the Londinvm Feracissimi Angliæ Regni Metropolis (to quote its full title) from George Braun and Francis Hohenburg's *Civitates Orbis Terrarvm*, which was dedicated to Maximilian II. in the year 1572.

The maps unquestionably are valuable in themselves, though they scarcely seem to be an adequate return to the comprehensive address with which the society proclaimed themselves to the public. For not by the leisurely perusal of a pretty map unfolded upon the library table can the topographical history of London be profitably studied. To our mind, the society have begun where, in fact, they should have left off. Whilst they are occupied in reproducing documents that are already accessible, many important changes have passed over a town of whose topography they are the professed exponents and registrars. These constant alterations ought to be speedily recorded, or it will prove difficult to retrace them by-and-by. It is to be hoped, therefore, that they will spare no pains to maintain the annual "Record" in illustration of passing events, whereof we are promised a first instalment in September next. In one direction, at any rate, the society may, to some extent, be congratulated upon a display of practical wisdom. We believe they have never actively interposed on behalf of any particular structure marked for destruction. An attitude of *laisser aller* may, of course, in their case be carried too far. There are certain buildings,—like to Canonbury Tower, Staple Inn, or Charterhouse,—of whose final sentence we shall all learn with regret, inasmuch as on various points they possess a quasi-national importance which can never be regained. Yet it is equally certain that where an owner is bent upon improving his property by demolition or other way, no society, whether for Restoration, Preservation, or any other 'ation, can hope to prevent him from exercising his legitimate right. A few hours devoted to carefully surveying, planning, and drawing a house that is doomed to removal are worth more than weeks of idle protest and scolding, or of hand-wringing and unavailing lamentation over the avarice and sinfulness of the times.

The print may be seen at the Society's address, No. 6, Hanway-street, W.

* We except, of course, from this comparison Whittock's supposititions and in several particulars anachronistic amplification of Wynegaarde's drawing.

INDIAN CRAFTSMEN.

ONE of the most popular features at the "Colinderies" is the Indian Market, with its native workers. Crowds gather round the craftsmen all day, attesting the general interest taken in this section of the Exhibition; and, indeed, there are few people who are not interested in seeing clever manipulative skill, and the Hindoo craftsmen certainly give one the impression of being masters of their material. There seems to be no bungling, no hesitation about their movements or methods. They work as though the tasks they were engaged in had been committed to memory, had been rehearsed many times before until the performers were "letter" perfect. It may be that these craftsmen at the "Colinderies" are picked men, and yet, granting that they are more excellent than the average worker, more completely masters of their method than the rank and file, their method would be the same as that which obtains among the Hindoos, and it is their method that is so interesting to study.

The thing that strikes one on seeing these Hindoo workers for the first time is the position of the craftsman while at his work. All the craftsmen we Western people are in the habit of seeing stand up to their work, and hence it follows that the work itself is raised up to such a height as enables the workman to have command over it. The Hindoos, on the contrary, do not seem to have thought that their work could be raised from the position it occupied in remote ages, and so they take themselves down to their work, and all their operations take place on the ground.* It would be quite impossible for any one not long habituated to such movements to sit down with the body and thighs resting on the calves of the leg and to perform any kind of delicate work. We could not keep in such a position for many moments, and to do any delicate work then would be out of the question.

These native craftsmen appear to have command over their work, and they certainly bring some very delicate work to a successful issue; but clever as these Eastern workers may be in carrying on skilful operations in such a position, it is very unlikely they will ever convert us Western folk to their ways. We prefer an elevated platform or table to work on or work at: their bench is Mother Earth; and the wonder is that they can conduct some operations, such as throwing pottery and turning metal work, with anything like success, so little adapted does the position of the worker seem to such operations. The old potter, who is said, though with doubtful authenticity, to be 102, works in the most primitive manner. His wheel is a circular stone slab turning freely upon a pivot working in a hollow formed in another stone. To give it the required circular motion, he takes a piece of stick, and with one end on the outer edge of the stone, and the other end grasped in his hands, he spins the stone round and round for a minute or two, until the wheel has sufficient velocity, and then conducts the operation of "throwing" or "turning" as our own potters do. The best compliment we can pay his skill is to say that

* The Japanese, as those have seen who have visited the "Japanese Village," go so far as to make the floor a drawing-board, and actually bend right down, almost lie down, in fact, when drawing.

he is able to throw some good shapes, such as the round-bellied water-bottles, with long narrow necks; for the wheel does not keep a perfectly even horizontal position the whole time, but wobbles considerably, and even with all his skill it is impossible for him to throw perfectly true shapes, and this accounts for the fact that a great deal of Eastern pottery is not mechanically true.

And as with the potter's mechanical arrangements, so with the other craftsmen. Their mechanical appliances and helps are of the most rudimentary kind, and apparently they seek not to improve upon them. The metal-worker "spinning" or turning copper dishes gives motion to the dish by means of a "string-bow" such as is used by watch-makers and others for drilling holes, and the seal-engraver uses the like means for cutting his gems with. One would be inclined to think that the European lathe is unknown to the native craftsmen. What a contrast these Hindoos present to us! We spend more time in perfecting machinery and appliances than in gaining manipulative skill. The Hindoos seem to disdain mechanical aids except of the rudest kind, and that gives them greater scope for the display of their own inimitable hand-cunning. We may safely aver that they will only preserve their individuality and produce their unique work so long as they employ their own means. With the adoption of European methods will come the loss of individuality, as is happening in those states where European influence has made itself most felt. It seems, of course, a pity, in one sense, that the Hindoo workers should add so much to the difficulty and labour of their work by using defective or rudimentary apparatus, and yet in our country do we not find that the more machinery is perfected the more mechanical and machine-like become the workers? In fact, the craftsman is in time superseded by the lacquey of the machine. We have no workers here analogous to these Hindoo craftsmen, who seem to carry everything in their head and at their finger-ends, for we see them at the "Colinderies" carving the most elaborate patterns in wood, *repoussé*-ing brass, working in silver and gold, and carrying out the most skilful and difficult work without apparently requiring any external aids, whether of machines or drawings.

There is a figure-modeller at work, and it seems to him no more difficult to model figures, singly or in groups, than it would be for us to cast them from a mould. And very excellent these figures are, full of action and character, and by no means badly proportioned; and yet, as far as we can judge, they are all evolved from his inner consciousness. Like the Japanese, these Hindoos seem to have learned their work by heart, and they are able to reproduce it at any time without hesitation or difficulty. Of course it is said that they work in a groove and never depart from well-established precedent; but, granting this be so, it must be admitted that the result, uniform as it may be, is entirely successful; and it is very questionable whether we work less in a groove than they do,—whether, to borrow a parallel simile from Tennyson, "Under the same wheel the same old rut" does not "deepen year by year." And the average result with us is unquestionably inferior to theirs, at least, as far as decorative art is concerned.

Like the Japanese, too, the Hindoos make great use of their feet. Their feet are to them almost as useful as a monkey's are to him, and they are nearly as valuable as a second pair of hands. With the exception of a solitary individual or two born without or minus his hands, we never use our feet, except in locomotion. The Hindoos, like the Japanese, hold the wood or stone they are carving or working with their feet, so that their hands are entirely disengaged.

Equally interesting with the metal and wood work is the weaving. One family is engaged in carpet-making, and very novel and striking is it to us to hear the carpet-weavers chanting, in a monotonous dirge-like voice, the "pattern." Many who see them for the first time might be inclined to think that the weavers were either singing some of their native catches or going through a religious duty. They will be disappointed to hear that they are occupied in nothing more exciting, nothing less romantic than singing the pattern, or rather responding to the man who sits behind with a sample pattern before him, which he reads out to the workers. But there is one interesting feature in this which we should not miss. We see at once how Eastern patterns have slowly been evolved. We can trace the whole history of woven patterns as we watch these carpet-weavers at work. How in the earliest days they merely alternated the stitches so as to produce lines and squares, and as time went on the squares instead of being simple became more complex, and instead of a series of large single squares or combinations of squares, patterns composed of multitudinous small squares,—for every stitch in a carpet is a square,—were formed, though no attempt was made to alter their character, and hence we find that the patterns in all Eastern carpets have a square angular appearance, and are never flowing and "scrolly." In all work the method should always suggest the pattern, which should be evolved, as we see it has been in the Eastern carpets, out of the method itself; and with the simple intuitive Hindoos this is so in all their works. In their *repoussé* work we find them using patterns, or, rather, we find them decorating the metal with patterns that the punch and hammer would most easily naturally form. In their carpets, elaborate as they are to the eye, we find the pattern simply an aggregation of simple *motifs*, such as would be best and easiest produced by a series of square stitches; and in the durrees, for there is a durree weaver at work, we see how it comes about that the decoration takes the form of bands and apparently wide zigzag squares, and the reason for this is at once made plain to us when we see a durree woven; for the fundamental principle in design is that the means and method of production should suggest the design and fix its character. With us too often the opposite to this obtains.

The brilliancy of Eastern dyes has often been dwelt upon, but though we can see a dyer at work, we are no nearer the secret of their success than we were before. The Hindoos are able to get brilliant and luminous colours without crudity, and hence their carpets and woven fabrics are rich and harmonious in colour. We, on the contrary, to obtain harmony (so-called) have to sacrifice brilliancy and depth, just as the French School of colourists to obtain tone use the colours of dirt, and really avoid the difficulties they are supposed to triumph over. There is one colour we never seem to be able to obtain, and that is a rich orange yellow, a colour that plays a most important part in all Eastern carpets. Now that in the Economic Court, presided over by Dr. Watt, much of the raw material used by the Hindoos is exhibited, it would be certainly worth the while of English dyers to inquire into the secret of the success of the Eastern peoples in dying, and see if we cannot alter our methods or use their materials. There is great scope for improvement, notwithstanding the advance made in this department of industry in recent years.

But having thus cursorily glanced at some of the most obvious traits in these Indian craftsmen, what is the conclusion of the whole matter? Wherein do these workers differ most strikingly from those we are habituated to? Not only are they possessed of the most remarkable hand-cunning, the most skilful digit-machinery that humanity can see in operation, but they each individually direct their own hands, so that their labour is not without art. With us we have a less skilful digit-machinery, directed for the most part not by the possessor, but by another. Our craftsmen are divided into those who carry out and those who invent or initiate. And this dual partnership is not united, so that it cannot be detected. Few writers who have worked in collaboration have deceived the reader into the belief that the result has emanated from one brain; and in craftsmen's work this difference is still more strikingly manifest. The worker here has lost his individuality. He is simply a cog in the wheel, a small portion of a huge human machine. Until we restore this personality to our work we shall only be manufacturers and shopkeepers, not craftsmen and artists. Whether it is possible to do this under the present economic conditions of Western life, is of course another question.

Ironwork.—We have received the new illustrated catalogue of iron sections of the New British Iron Company (Limited), a convenient book of reference for specifying, containing a great number of figured sections of rails, bar-iron of various sections, tee-iron, angle-iron, &c.

ARCHITECTURAL ASSOCIATION:

VISIT TO THE JUNIOR CARLTON CLUB.

On Saturday last a large party of the members of the Architectural Association visited this Club-house. They were received by the architect for the extension, Mr. J. Macvicar Anderson, who conducted them over the whole of the building, and gave a most interesting and instructive explanation of every feature.

The original building was erected sixteen or seventeen years ago, from the designs of Mr. David Brandon. It has been extended by the addition of a wing on the west end, and the whole of the interior has been remodelled in a very skilful manner. The principal entrance, which was originally at the end, has been moved to the centre. This very much improves the architectural effect, and has the advantage on plan of allowing the end rooms on either side to be the full depth of the site. A square entrance-hall has been formed, from which steps lead up between Devonshire marble columns, each in one piece, to the inner hall and staircase. Both are lined with Carrara and Devonshire marbles, in various colours. The whole of the front on the right of the entrance is taken up by the smoking-room; it is L-shaped, as at the end it extends to the rear. The back stairs, lifts, &c., occupy the rest of this side. Turning to the left, in front is the writing-room; beyond this, in the new portion, the morning-room. This is a very fine apartment, the full depth of the site, and has a bay window at each end. Round the walls are scagliola columns and pilasters.

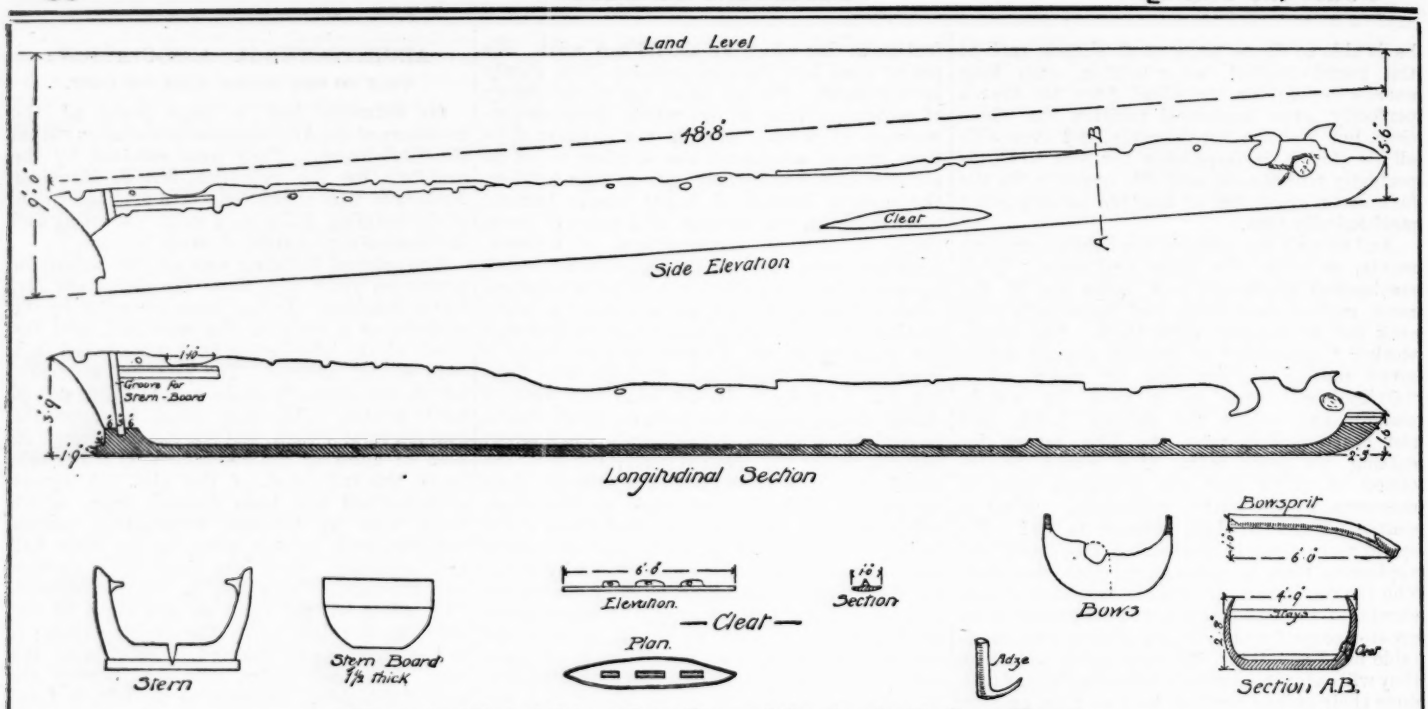
The grand staircase has solid Carrara marble steps, red marble balusters, and grey marble hand-rail. Ascending to the first floor, a very spacious landing is reached, which will be furnished with couches for use as a lounge. The whole of the old frontage on this floor is taken up by the dining-room,—a splendid apartment, 130 ft. long. It is divided up by red scagliola marble columns, and at the end extends to the rear the same as the room below, and has a very pleasant outlook on to St. James's-square. The serving-room is very conveniently placed adjacent to the back stairs; it is fitted up with steam hot-closets, and has five hydraulic lifts. The water required by the latter is not wasted, but pumped up for re-use. The remainder of this floor is occupied by the library, which is similar to the morning-room underneath.

The staircase up to the second floor has the wrought-iron balustrading from the old one adapted. On this floor are three billiard-rooms, two of which have top-lights, the third being intended for night use only. They are large enough for two tables, but Mr. Anderson strongly objects to more than one being placed in a room. The remainder of the floor is occupied by the Parliamentary library, a smoking-room with bar attached, the Secretary's office, which is conveniently placed adjacent to the back stairs, lifts, &c. On the third floor are the bedrooms, lavatories, &c., for the servants; those for the men being to the right of the staircase, and the women's to the left. The lavatory floors are covered with lead turned up against the walls, and have warning-pipes discharging on the stairs, so that any escape of water will make itself seen, and must be attended to at once. In the roof is a tank holding 6,000 gallons.

Between the ground-floor and basement is a mezzanine, in which are the lavatories and water-closets for the use of members. These are approached by a private staircase. Each water-closet has an electric light, automatically arranged so as to be alight when the door is closed and the water-closet in use, and to go out when the door is opened. The remainder of the mezzanine, which is completely shut off, is occupied by the still-room, housekeeper's room, &c.

The kitchen, stores, larder, &c., are in the basement. The boilers and machinery for the electric light are in the vaults under the pavement in Pall Mall. The engines, which are by Armington & Sims, are guaranteed to work without the slightest vibration or noise, Edison's "silencer" being used to prevent the latter. Beyond these vaults are a most extensive series of wine-cellars, which extend to the centre of the road.

The electric light is provided throughout. Ventilation has been carefully considered, fresh air being admitted by means of vertical tubes, and foul air extracted through gratings in the ceilings into special shafts. Some of these are taken into a large general shaft, and the



The Ancient Boat at Brigg.—From Measured Drawings by Mr. James Thropp.

remainder carried up separately, with revolving cowls at the top.

The hall and principal corridors are laid with mosaic by Messrs. Burke & Co., who have also done the marble work. The floors of the principal rooms are of parquet manufactured in Brussels and laid by Mr. Ebner on tiles which are set on the fireproof concrete construction. The general contractors are Messrs. Holland & Hannen, whose foreman is Mr. Beal, and the clerk of works is Mr. J. J. Kerss.

Mr. Anderson then took the party to the new drill-hall that has been recently erected for the London Scottish Volunteers. This clever building has been recently described in our pages (see p. 879 of our last volume); it is, therefore, unnecessary to give any particulars now.

A very cordial vote of thanks to Mr. Anderson was given by the members, and the party broke up, having spent three hours in a most instructive manner.

THE BRANT MEMORIAL.

A FEW privileged guests, including some of the representative citizens over here from Canada, were invited in the early part of June to view the bronze castings of the Brant Memorial, which have now left Mr. Percy Wood's studio at Chelsea for their final resting-place at Brantwood, Ontario, Canada. Mr. Percy Wood, son of the late Mr. Marshall Wood, was the successful competitor for the execution of this National monument, being commissioned by the Brant Memorial Association to execute the memorial on the strength of his clay sketch; the other two competitors being M. Bonheur, of Paris, and Mr. L. P. Hébert, of Montreal. The Dominion Government of Canada assisted the Association by a grant of 1,000*l.*, and a like sum was given by the Grand Council of the Six Nations Indians. The English Government after some hesitation granted enough old bronze cannon to supply the metal for the castings. The memorial is to perpetuate the memory of Thayendanegea, or, as he was called in English, Joseph Brant, who was born in 1742, and who died in 1807, the head chief of the Six Nations Indians, through whose personal influence the Six Nations remained stanch to the English crown during the troublesome times of 1775. Brant came to England and was presented to George III., and he seems to have been a man of courage, personal prowess, intellect, and sagacity. The figure of Brant in the memorial is of colossal proportions, being 9 ft. high, and will be placed on the top of the pedestal. The face is modelled from a contemporary portrait, and he wears the leather tunic, the kingly cloak, with the bear's claws necklace, and the Indian mocassins. The combination pipe and tomahawk is in his right hand, and he wears on his head the single eagle plume, also a sign of his rank. The right hand group as you face the memorial shows life-size figures of chiefs of the Mohawk, Tuscarora, and Oneida nations, bearing the scalping-knife, spear, and peace-pipe. The left-hand group represents chiefs of the Seneca, Onondaga, and Cayuga nations, with the bow and arrows, war-club, and flint-lock gun. As the representatives now living in the Indian reserve of those nations who fought for the English in the eighteenth century have taken a great personal interest in the memorial, the sculptor had to be rigidly accurate in all the details, and sittings were obtained of the descendants of the chiefs figured in the memorial; but one great difficulty was to get pure-bred Indians, for, owing to their intermarriages with Irish, Scotch, English, and French, the present Indians are very mixed. Some photographs Mr. Wood had taken of some of the Indians now living are interesting as showing how the Indian type is in many cases almost wholly obliterated by the admixture of foreign blood. The trophies consist of Indian weapons and implements. The Totems of the Six Nations, the bear, the wolf, and the tortoise, were introduced specially at the request of the Indians themselves. The *bassi-relievi* on the base of the pedestal represent, on the front, an Indian war-dance; on the back, Brant addressing the chiefs in Council; while the two circular reliefs represent the Six Nations bear and the Canadian wolf, with appropriate foliage. The pedestal will be of grey Cornish granite, cut by Messrs. F. G. Anstey & Co. The casting was executed by Messrs. R. Masefield & Co., of Chelsea.

The Natural History Museum at Hamburg.—After having surmounted various difficulties connected with the preliminary arrangements, the promoters of this scheme have entrusted to Messrs. Semper & Krutisch, of Hamburg, the erection of the museum above named. At a recent meeting of the local Architectural Association Herr Semper gave an interesting description of the work. The building will be 269 ft. in length and 115 ft. in width. In the basement will be the attendants' rooms and the various apartments required for preparing the objects to be exhibited. The principal room on the ground floor will contain the largest specimens (such as whales, elephants, &c.); it will have an area of about 30,000 square feet, and will be open at the centre to the top of the building. The intermediate floor will contain the zoological section, the director's rooms, and the library. The upper floor will be 40 ft. in height, and will contain a gallery, 30 ft. in width, running along the entire building. This will be lighted in part from above and in part laterally. A supplementary gallery is lighted from above. This mode of construction has necessitated all the internal work being of iron. The heating appliances (by air and steam) are estimated to cost about 1,300*l.*, and the entire structure about 40,000*l.*, a further sum of 10,000*l.* being reserved for the contingent execution of the façade in sandstone instead of cement.

THE ANCIENT BOAT AT BRIGG.

WE are indebted to Mr. James Thropp, C.E., County Surveyor for Lincolnshire, for the accompanying drawings of this interesting relic, and we extract from the *Lincolnshire Chronicle* the following remarks on it, forming part of a paper read by Mr. Thropp at a recent meeting of the Lincoln and Nottingham Archæological Society:—

The unexpected discovery of an ancient canoe or boat at Brigg, Lincolnshire, during the process of excavation for a new gasometer at the Gas Company's works at that town, has been a most interesting and pleasing incident to lovers of antiquities. The premises of the Gas Company are situated on the east side of the river Ancholme, about 200 yards north of the market-place. The boat is made out of the trunk of an oak tree, perfectly straight and true; it is 48 ft. 8 in. long, and varies from 5 ft. to 4 ft. in width, and does not appear to have had branches, except near the bow, where, I think, two have been cut off. It was found about 40 yards from the river, lying due east and west, on what must have been a sloping beach, the stern being 9 ft. below the surface level, and the bow 5 ft. 6 in. below it. The soil is about 1 ft. 5 in. deep, and clay both above and below the position in which the boat rested, and the continued excavation is still in clay. As the work of excavation has been carried on, other objects of interest have been found, enabling us to decide one or two important points respecting the boat. First, the bowsprit was discovered, almost close to the bow, and then, thirteen yards in a southerly direction, the stern-board; also, bones of animals. The boat itself was filled with black mud, and at the bottom three curious leeches, one 6 in. long, were found alive; they are now preserved by the Gas Company in spirits of wine. The groove at the stern was partly filled with dried moss, used apparently for caulking. The stern-board fits the end, and will slide into the grooves; it is of oak planking, 1½ in. thick, and consists of two boards, one being 1 ft. 5 in. wide, and the other, 10 in., by 4 ft. in length; the sides and bottom are shaped to suit the grooving. What were the tools which the boatwrights used to finish the planking? They may have been flint or bronze, but certainly the manipulation was of no ordinary merit in those days. From the end elevation and longitudinal section, it will be observed that part of the stern appears to have been decked, and the boards laid on the two ledges, one on each side, which were worked out of the solid, not framed in. Transverse stays were left in the bottom, when the sinking or cutting out was done, for the purpose of stiffeniug the boat; three of them are still perfect, and will be noticed in the longitudinal section. The bottom of the boat is flat throughout its entire length; the keel, if it may be so described, at the stern, is splitting, owing, I believe, to shrinkage and the

great strain imposed upon it during the removal to its present temporary position. The stern and the bow were both strengthened by part of the bottom being left more solid, as shown by the longitudinal section. The holes at the sides are not all of the same size; they are chiefly elliptical in shape, and may have been used for ropes when under sail, and partly for stays, of which one has been discovered in almost a fossil state. By what means the tree was hollowed out can only be a matter of conjecture; it may have been charred a certain depth, and finished with bronze or flint tools. Part of a branch of a tree was found, much resembling an adze, and also some flints, which were so hard that the gas manager cut glass with them as readily as if a diamond had been used. It has been suggested that the flints were fixed at the curved end of this adze when in use. Whether the adze was used in the construction or not cannot be determined authoritatively, but it is quite possible it was carried by the ship-carpenter for executing needful repairs. We can see that repairs proved necessary from the discovery of a cleat, 6 ft. long and about 14 in. wide, tapered at the ends, fixed to an old wound on the right or starboard side of the boat, shown in dotted lines on the elevation. The cleat was cut out of a solid piece of wood, the edges are bevelled, and three studs were left so that they might pass through the side of the boat and receive, through the circular holes cut through them, wedges or pins to bring the cleat "home," and secure a perfectly water-tight joint. The elevation and longitudinal section of the bow of the boat shows the manner in which it was prepared to receive and support the bowsprit. The irregularity of the sides indicate the gradual decay which was proceeding, although it is fair to assume that some part of the top edges would be fractured in removing it from its late position to the company's yard. Its removal required the utmost care, and I cannot help expressing thanks to the Gas Company, their chief officers and men, for the careful and skilful manner in which they have accomplished the self-imposed duty of preserving for our benefit this extraordinary relic of the past. Whatever its ultimate destination may be, I do hope that the same watchful care it has hitherto received will attend its transit to the British Museum, —not to the cellars thereof, let us hope,— or wherever else it may be localised. It is open to doubt whether it has ever been a sea-going boat, but, at any rate, it would be equal to the demands of ordinary weather in the Humber, and that it has been a sailing one may be inferred, not only from the preparation of the bow for a bowsprit, but from the fact of the bowsprit itself being found; but why a bent one was preferred to a straight I leave to the more experienced to decide. I do not think its tranverse strength, on account of its comparatively great length, although stayed, would have enabled it to bear the great strain of waves such as would be met with in the German ocean, but as I am neither a sailor nor a naval architect, this opinion must be taken for what it may be worth. I believe it would carry between forty and fifty men, including the sailors, and would evidently, in its day, have been an enemy of no mean power to an opposing force. With regard to its age, supposition from known data leads experts to fix it at not less than 2,000 years; there is every reason to presume that it is of ancient British origin. We can scarcely give the Romans credit for so primitive a design; it is, however, possible that it has carried Roman soldiers, for, in the absence of other craft, doubtless the Romans would impress into their service whatever came to hand, and when it had served their purposes, and finding its sides wearing away, they would leave it to take its chance on the river side, as many a craft is now allowed to sink into the sands on our coast, the oak of whose ribs will be imbedded, and in thousands of years to come, when the sea no longer washes the shore, but upheaval and subsidence have alternately done their work, the generations of those days will speculate on the nature and build of the vessel they will find in the sandstone rocks. To add to the vicissitudes of storm and tempest, of probable battle, of desertion on the river side, and its long rest in the harbour of the ages gone by, the boat at length became the subject of a lawsuit in the High Court of Justice, Chancery Division, before Mr. Justice Chitty, who had to decide whether it should be the privilege of the Lord of the Manor, Mr. Carey-Elwes, or the Brigg Gas Company, to present it to the authorities of the British Museum. He has given judgment in favour of the Lord of the Manor, who will therefore have the right of disposal of the boat.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THE annual meeting of this Association was held last week at Hanley.

The retiring President, Mr. R. Vawser, of Manchester, read the annual report, from which it appeared that the progress of the Association during the past year had been fairly maintained. During the year twenty-five new members had joined the Association, four had resigned, and eleven names had been written off. There were six honorary members and 244 ordinary members, thereby making a total membership of 250. The balance-sheet showed 206*l.* 4s. in hand. Leicester was recommended as the most suitable place to hold the next annual meeting. The report was adopted.

The following gentlemen were elected officers for the ensuing year:—President, Mr. J. Lobley. Vice-presidents, Mr. C. Dunscombe, M.A., Liverpool; Mr. J. Gordon, Leicester; Mr. H. U. McKie, Carlisle. Ordinary members of the Council, Messrs. H. P. Boulnois, Portsmouth; A. Brown, Nottingham; J. Cartwright, Bury; T. Coulthurst, Derby; J. H. Cox, Bradford; E. B. Ellice-Clark, Hove; A. M. Fowler, Stockport; T. Hewson, Leeds; T. de C. Meade, Hornsey; A. W. Parry, Reading; R. Read, Gloucester; and T. Walker, Croydon. General honorary secretary, C. Jones, Ealing. Treasurer, Lewis Angell, London. Secretary, T. Cole, London.

After a vote of thanks had been given to the retiring President, the new President, Mr. Lobley, proceeded to give his inaugural address, in the course of which he said,—The objects of the Association have often been ably set forth in the addresses of your former Presidents, and I should only be imperfectly going over the same ground if I attempted to state at length what they are. Suffice it to say that our Association consists of between 200 and 300 members, each representing an Urban Sanitary Authority. We hold meetings in various parts of England, inspect important works, discuss sanitary science in all its branches, and, in the words of Rule 2, "promote and interchange among the members that species of knowledge and practice which falls within the department of an engineer to a local authority." During the past year the Council of the Association has instituted a system of voluntary examinations in all branches of knowledge requisite to those desiring to be surveyors to sanitary authorities, and the result of the first examination held gives promise that this has been a wise step, and will lead to great benefit in future to all concerned. Your Council has also given attention and consideration to a proposed change in the Public Health Act, 1875. For several years past a Bill has been brought into the House of Commons to amend section 150. This is one of the most important sections; indeed, I might say, as regards town surveyors, the most important section in the Act. Those who have had much experience of the working of the existing law, including in that expression the corresponding clauses of the Acts of 1848 and 1858, know well how imperfect it is, and how greatly there is need for amendment. Before the formation of our Association, the men who had most experience in the operation of a law had no proper means of bringing their opinions before the Local Government Board or Committee of the House of Commons. I can lay claim to twenty-five years' town work, to many miles of private street apportionments, first in Liverpool, the largest Urban Authority in England, and subsequently in this town of Hanley. I trust the day is passing away when the practical knowledge thus gained by many of the members of this Association should not be available to those seeking from time to time to amend the law. Your Council has succeeded by its Parliamentary Committee in obtaining important additions to the Bill, and, although it is not entirely such as we might desire, there are so many good points about it that its enactment would on the whole be very advantageous. In approving of this Bill, this Association can claim to be regarding solely the interests of the public, both ratepayers and owners of property, because there is no doubt that it will very greatly increase the work of the Borough Engineer and the Local Board Surveyor. It is much to be regretted that, after passing through the House of Commons, it should have been wrecked by a side wind in the House of Lords. Without in any way entering into the arguments of those who, in the supposed interests of the railway and canal companies, proposed to exempt them altogether from contributing to the cost of private streets, I venture to think it will be better to continue under the existing statute than that such a clause should become law without a very full and calm consideration. Such consideration could not possibly be given to a clause tacked on to a Bill in the last days of a Parliament; and, indeed, it is difficult to believe that it would have any chance of passing the House of Commons except in a special Bill of exemptions. What, however, must at once strike all of us, is that the railway and canal companies have been singularly ill-advised in risking the passing of the Bill as brought into the House of Lords. As the law stands now, the surveyor of the Authority must apportion the expenses of a street in proportion to the frontages of the property, and cannot take into his consideration that some of the land may belong to a railway company, who do not make any use whatever of the street. The Bill would have made it possible for the Local Authority to take such a circumstance into consideration, and would also have enabled the railway companies to appear before a tribunal, and to state their case with some degree of assurance that the arguments brought forward would result in some abatement in their expenses. It is nothing less than astounding that those most likely to benefit by the proposed change in the law should have prevented that change, by insisting on a clause which, in its present bare form, could not have had a reasonable chance of passing into law. Mr. Lobley then went on to describe the progress of sanitary and other public works in the town of Hanley. He is reported in the *Staffordshire Sentinel* as saying that while, fifteen years ago, there was not one mile of good sewers in Hanley, there were now thirty miles. The Corporation are now engaged in erecting a new Quarter Sessions Court. Many of the features in connexion with this court and approaches are caused by the necessity to adapt it at points all around it with the existing buildings on three sides, and the proposed Public Assembly Hall on the fourth side. The cost of the Town-hall, inclusive of the work in hand, will amount to 15,000*l.*, and the public hall, for which 8,000*l.* has been borrowed, will bring the total cost to 23,000*l.* The building will cover nearly an acre of ground, having a length of frontage of 152 ft. and a depth of 262 ft. The public hall, for which the plans are being made, is expected to accommodate 3,000 persons.

Subsequently, Mr. M. O. Tarbotton, M. Inst. C.E., of Nottingham, read a paper entitled "Notes on Recent Sewage Operations in Nottingham and its Neighbourhood"; and Mr. E. B. Ellice-Clark, County Surveyor for West Sussex, read a paper on the maintenance of rural roads. The substance of this paper was printed in our last (see p. 72, *ante*).

Among other papers read was one on "The Economic Production of Coal Gas," by Mr. R. P. Spice, who again called attention to the coal-lining process, the utility of which, he stated, is now thoroughly established. It had been in uninterrupted use at Tunbridge Wells for two years and a half, and, the character of the coal being ascertained, the results as to the reduction of the sulphur compounds could be accurately foretold.

"Electricity as a Town Illuminant" was the subject of an address by Mr. James N. Shoolbred, M. Inst. C.E., who pointed out that the difficulties in the way of capitalists investing their money in this new illuminant were owing to the restrictions placed upon them by the Government. At the present time this was the only country in which such restrictions were placed upon capitalists investing money in electric light. He referred to the experiments of lighting the art galleries and free libraries with the incandescent lamps, and mentioned the experiments which had been in operation in the House of Commons for some considerable time. The observations which had been taken showed a notable diminution in the heat of the rooms, amounting in many cases to 75 per

cent.; besides that, there was the total suppression of all noxious gases which existed during the gas-burning period.

During the meeting, which extended over three days, the members held their annual dinner, and visited the Bucknall-road canal bridge and retaining-wall, the sanitary hospital, Bucknall; the Nelson and Eastwood bridges, and several other works of interest.

ARCHÆOLOGICAL SOCIETIES.

British Archæological Association.—We have received the programme of the Darlington and Bishop Auckland Congress, which is to be held, under the presidency of the Bishop of Durham, from Monday, July 26th, to Monday, August 2nd, 1886, with one or two extra days. This is the forty-third annual congress of the Society. Amongst the places to be visited will be Haughton-le-Skerne, Aycliffe, Durham, Piercebridge, Coniscliffe, Gainford, Staindrop, Raby Castle, Barnard Castle, Egglestone Abbey, Bishop Auckland, Escombe, Binchester, Richmond, Easby, Catterick, Croft, Hurworth, Neasham, Sockburn, Dinsdale, Aysgarth, Bolton Castle, Redmire, Wensley, Middleham Castle and Church, Coverham Abbey, Monkwearmouth, Jarrow, and Hexham.

Cambrian Archæological Society.—A meeting of the local committee appointed to make arrangements for the visit of this society to Swansea next month was held at the Royal Institution of South Wales on the 8th inst. A successful congress is anticipated.

Lincoln and Nottingham Archæological Society.—The annual meeting of the Architectural and Archæological Society of Lincolnshire and Notts was opened at Lincoln on the 30th ult. After morning service in the Minster, a meeting was held in the Chapter-house, under the presidency of the Bishop of Nottingham. The Precentor of Lincoln delivered an interesting preliminary lecture on the architectural history of the Minster, and afterwards conducted the party round the church. In the afternoon, various places of interest were visited, including Newport Arch, the Roman Portico (Bailgate), the Jew's House, John o'Gaunt's Stables, the Old Palace, the Vicar's Court, and several churches. In the evening, a meeting was held in the County Assembly-room, when papers on archæological subjects were read, viz., one on the "Tombs in Lincoln Cathedral," by Mr. M. H. Bloxam, and another on "Pre-Norman Sculptured Stones," by the Rev. G. F. Browne. On the second day of the meeting (July 1), the proceedings commenced with an excursion to Canwick, Branston, Nocton, Dunston, Blankney, Navenby, Somerton Castle, Coleby, Harmston, and Waddington. At an evening meeting, Mr. James Thropp, C.E., County Surveyor, gave a description of the ancient boat which has just been found at Brigg, and of which we give some diagrams and particulars on another page.

Worcester Diocesan Architectural and Archæological Society.—The first excursion of this society was held on the 29th ult., when a large number of members and their friends proceeded by rail to Hereford, whence they started in carriages for Kilpeck (to see the well-known and unique church there), thence proceeding to Kingston Church and Madley Church.

A New Development of the Tricycle.—We are informed that a new departure in fire extinguishing arrangements has just been introduced by Mr. William Glenister, Chief of the Volunteer Fire Brigade, Hastings, and Mr. J. C. Merryweather, of London. The apparatus forms the subject of a patent, and consists of a tricycle with which the following are embodied:—(1) A hose reel carrying a quantity of specially-constructed hose for winding in a small compass, with all the attachments for delivering on to a fire from the street hydrants. (2) A light double-pump fire-engine in collapsible cistern, said to be capable of throwing 25 gallons per minute, to be worked by two pumpers. (3) A simple fire-escape, with descending ropes and bag. (4) Jumping sheets formed from the riders' seat. The machine is run at full speed by two men, and, if desired, the treadles can be so disposed as to work the fire-pump, but for this a special gearing is required. For country districts and suburban towns this improved machine may be found useful.

A CEREMONIAL TROWEL.

THIS silver trowel was designed by Mr. Robson for presentation to the Princess of Wales on the occasion of the laying of the foundation stone of the People's Palace for East London, of which we gave an illustration in the *Builder* of June 26th. It is finished in parcel-gilding, the handle being formed of boy figures, which support the Princess's coronet. H.R. Highness's monogram is engraved on the blade, which also bears the following inscription*:—

TO HER ROYAL HIGHNESS
THE PRINCESS OF WALES,
IN COMMEMORATION
OF THE LAYING OF THE FOUNDATION STONE
OF THE PEOPLE'S PALACE
FOR EAST LONDON,
ON MONDAY, JUNE 28TH, 1886.

PRESENTED BY THE BEAUMONT TRUSTEES.
SIR EDMUND HAY CURRIE, *Chairman.*
E. R. ROBSON ... ... *Architect.*
A. BROWNLOW ... ... *Hon. Sec.*

The trowel was especially designed by Mr. E. R. Robson, and executed by Messrs. Stephen Smith & Son, of King-street, Covent-garden.

Illustrations.

ST. PETER'S CHURCH, STREATHAM.

THE eastern portion of this church, including the chancel, vestries, and three bays of nave, was built some fifteen years ago from the designs of Mr. Richard Drew, architect. The building, which stands in a splendid natural position nearly on the summit of Streatham Hill, has remained up to the present time in an unfinished state, with an unsightly temporary west wall facing directly on the Leigham Court road. The advisability of completing the west end was seriously considered in 1882, and at the latter end of that year Mr. G. H. Fellowes Prynne received instructions to prepare the designs. A complete set of plans was made, showing, in addition to two new bays, a tower at the north-west corner and a western terrace with crypt under; also on the north side an enlarged vestry with parish room over; and on the south side a chapel with groined apsidal sanctuary. A flèche was placed at the junction of the chancel and nave roofs, which while being used for the sanctus bell, was intended to be utilised also as part of the system of ventilation. Our full-page illustration shows this first scheme for completion, as it would appear from the north-west corner. The plans were duly passed and tendered for by ten firms, and the tender sent in by Messrs. J. & C. Bowyer, of Upper Norwood, was conditionally accepted. However, circumstances transpired which rendered it impossible for the acting committee to carry out the work. A second scheme was then made by the architect in the hope that it would meet the views of all interested. Both schemes were, however, eventually abandoned and a new committee formed, and the architect received fresh instructions to make out a new scheme on somewhat hard and fast lines, rendering it necessary for him to make a building more picturesque than imposing.

Our illustrations of the adopted scheme show an interior view, looking west, and exterior view from north-west, with small descriptive plans of basement and nave floor.

The general scheme shows a basement with good-sized meeting and class-rooms, lavatory, water-closet, and heating chamber; a small door in the south porch leads to stair in circular turret.

On the nave floor two bays are added to the nave, much of the detail of which is similar to that already existing; the chief feature is the octagonal baptistry, projecting at the west end and divided from the nave by a fine traceried stone screen. There are large north and south porches. The aisles are increased in width 7 ft., the intention being to eventually increase the width of the existing aisles. The work is being carried out in three contracts by Messrs. J. & C. Bowyer, builders, and under the direct supervision of Mr. Prynne. The design for the third scheme, as illustrated, is exhibited in this year's exhibition at the Royal Academy.

SCREENS FROM THE INDIAN EXHIBITION.

THE portions of the screens from the Bombay Court in the Colonial and Indian Exhibition, of which we give illustrations this week, were executed from the general design of Mr. Griffiths, Superintendent of the Bombay School of Art, and Secretary to the Bombay Committee for the London Exhibition, and consist of two lengths, each of 80 ft., with additional end bays of 12 ft. wide each, the total length of work being 208 ft.

The Baroda section, a portion of which we give, was executed by native artisans under the superintendence of Mr. Wimbridge, the carved details having been selected by him from houses in Surat.

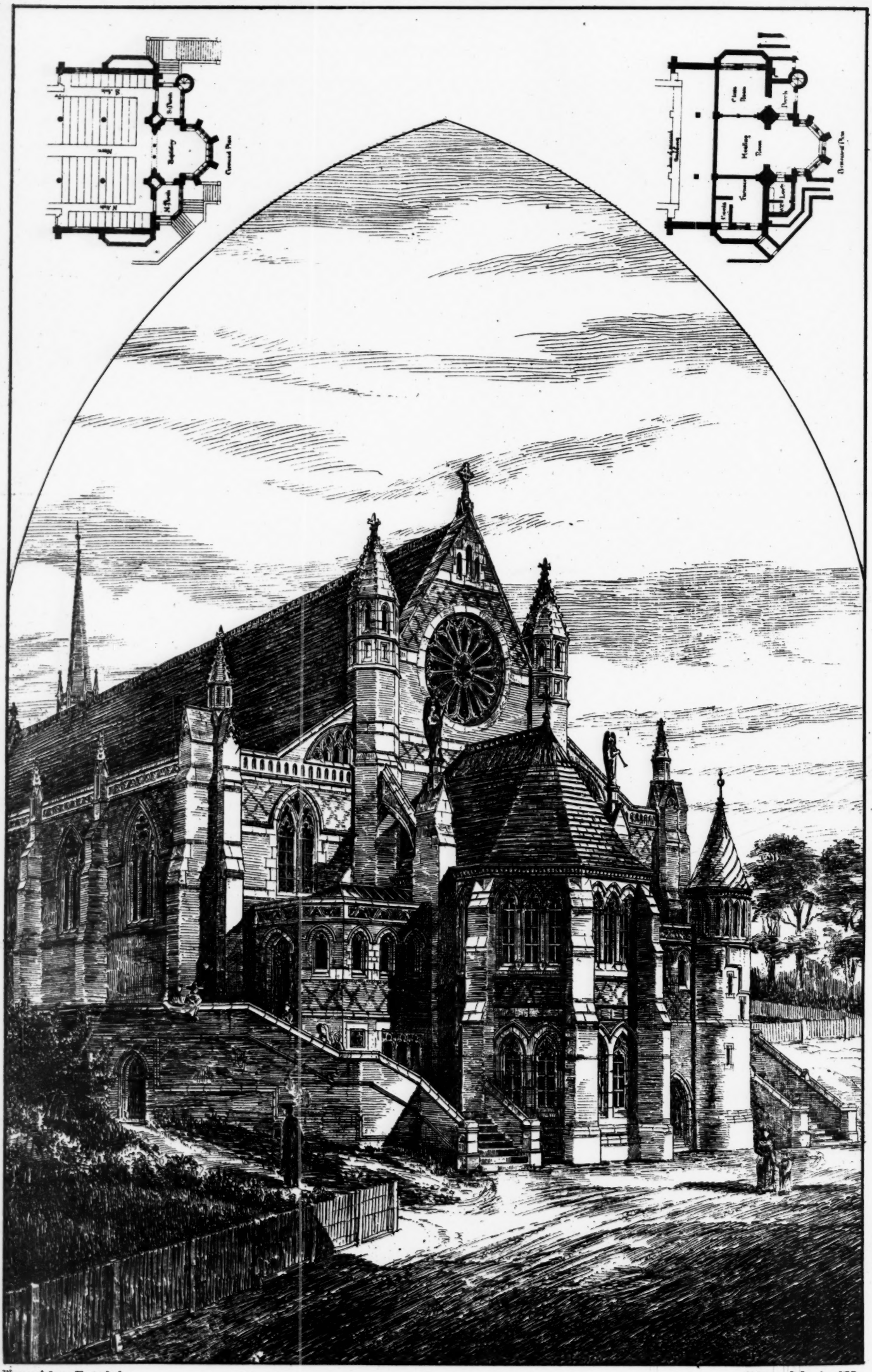
The Bhavnagar Section, which is perhaps the most artistic and one of the richest pieces of work among the screens in the Indian Court, was made in Bhavnagar, under the immediate superintendence of Mr. Proctor-Sims, the State Engineer, assisted, we are informed in the official catalogue, "by a very intelligent native 'mistry'"; but what particular profession or position that word implies we cannot inform the reader. The work is executed in teak, and the details taken from the old palace and from old houses in the town. The perfectly straight struts, covered with surface-carving, are among the most characteristic features in this, which is a piece of purely wooden construction; but an impartial criticism may certainly find fault with them as crushed over with ornament in a way that very much weakens their constructive expression. However, it is a charming bit of work, and we cannot always be logical,—even in carpentry.

SUNDERLAND MUNICIPAL BUILDINGS.

THIRD PREMIATED DESIGN.

WE give the plans and elevations of the design, by Messrs. Doubleday & Caws, to which Mr. Waterhouse awarded the third premium in the recent competition.

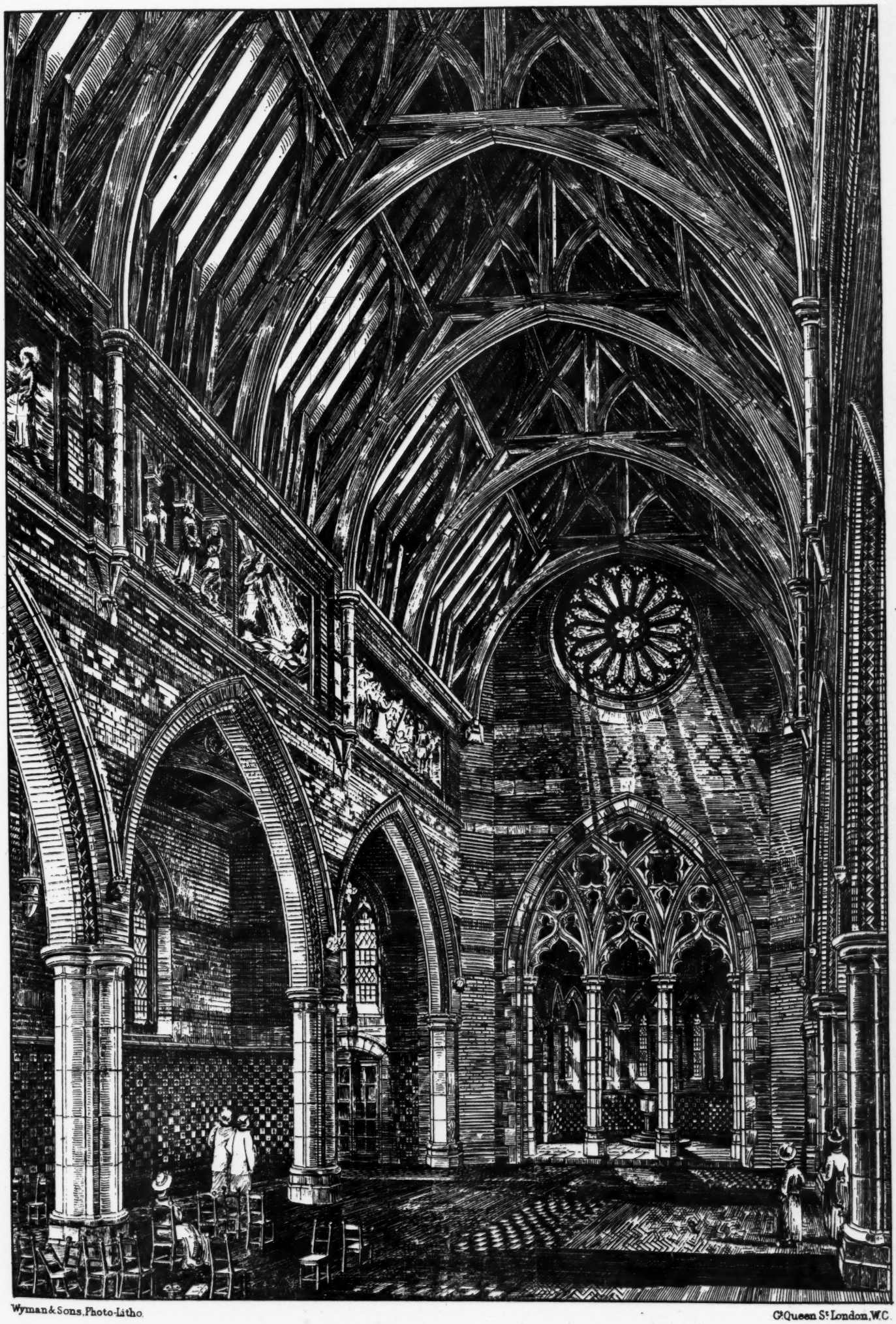
* The monogram and inscription are omitted on the illustration, which is given to show the general design.



Wyman & Sons, Photo-Litho. Cr Queen St London, W.C.

ST. PETER'S CHURCH, STREATHAM: ADOPTED DESIGN FOR THE COMPLETION OF THE WEST END.

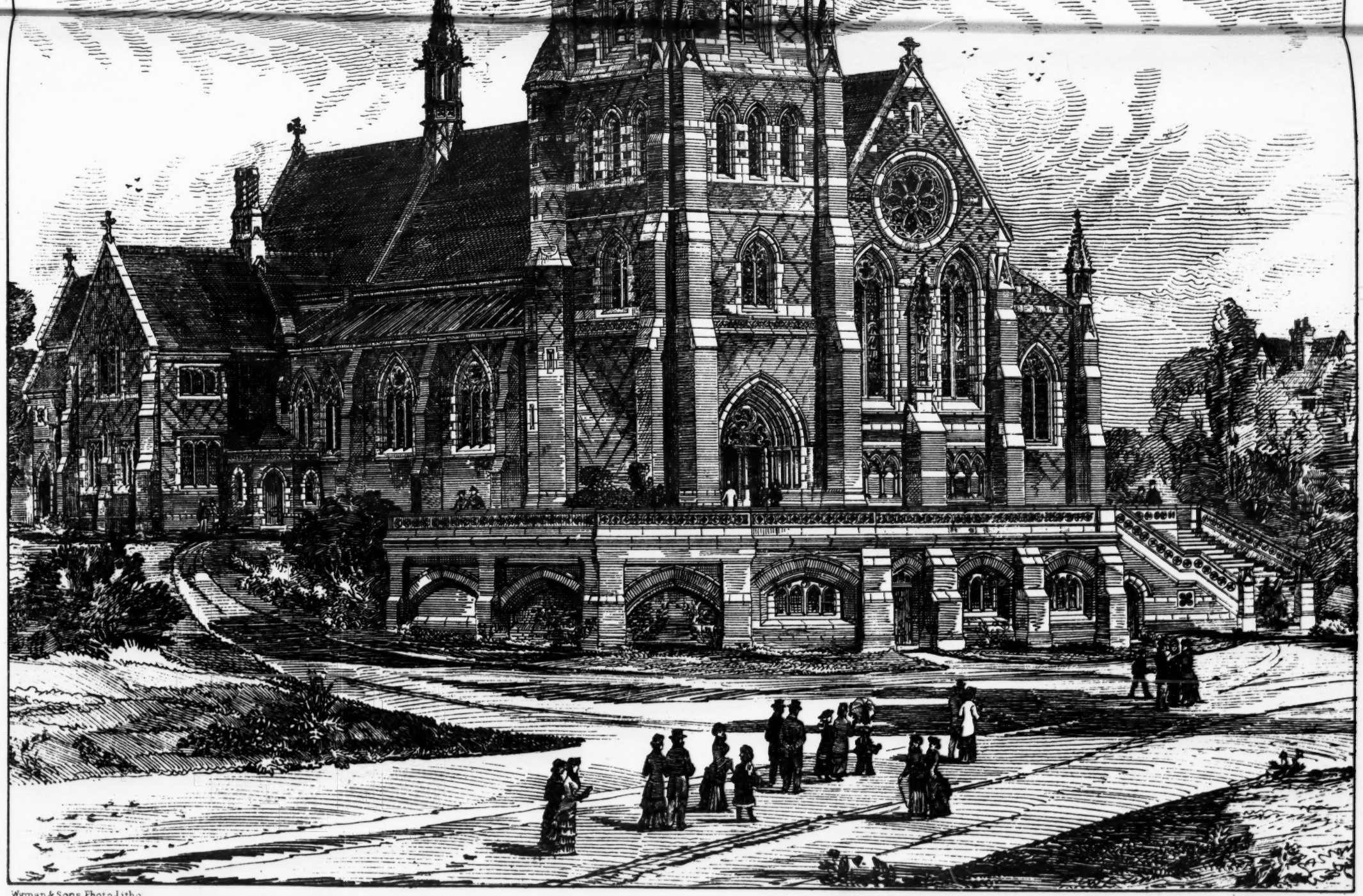
MR. GEO. H. FELLOWES PRYNNE, A.R.I.B.A., ARCHITECT.



Wyman & Sons, Photo-Litho. Cr Queen St London, W.C.

ST. PETER'S CHURCH, STREATHAM: INTERIOR OF THE WEST END.

MR. GEO. H. FELLOWES PRYNNE, A.R.I.B.A., ARCHITECT.



Wyman & Sons Photo Litho

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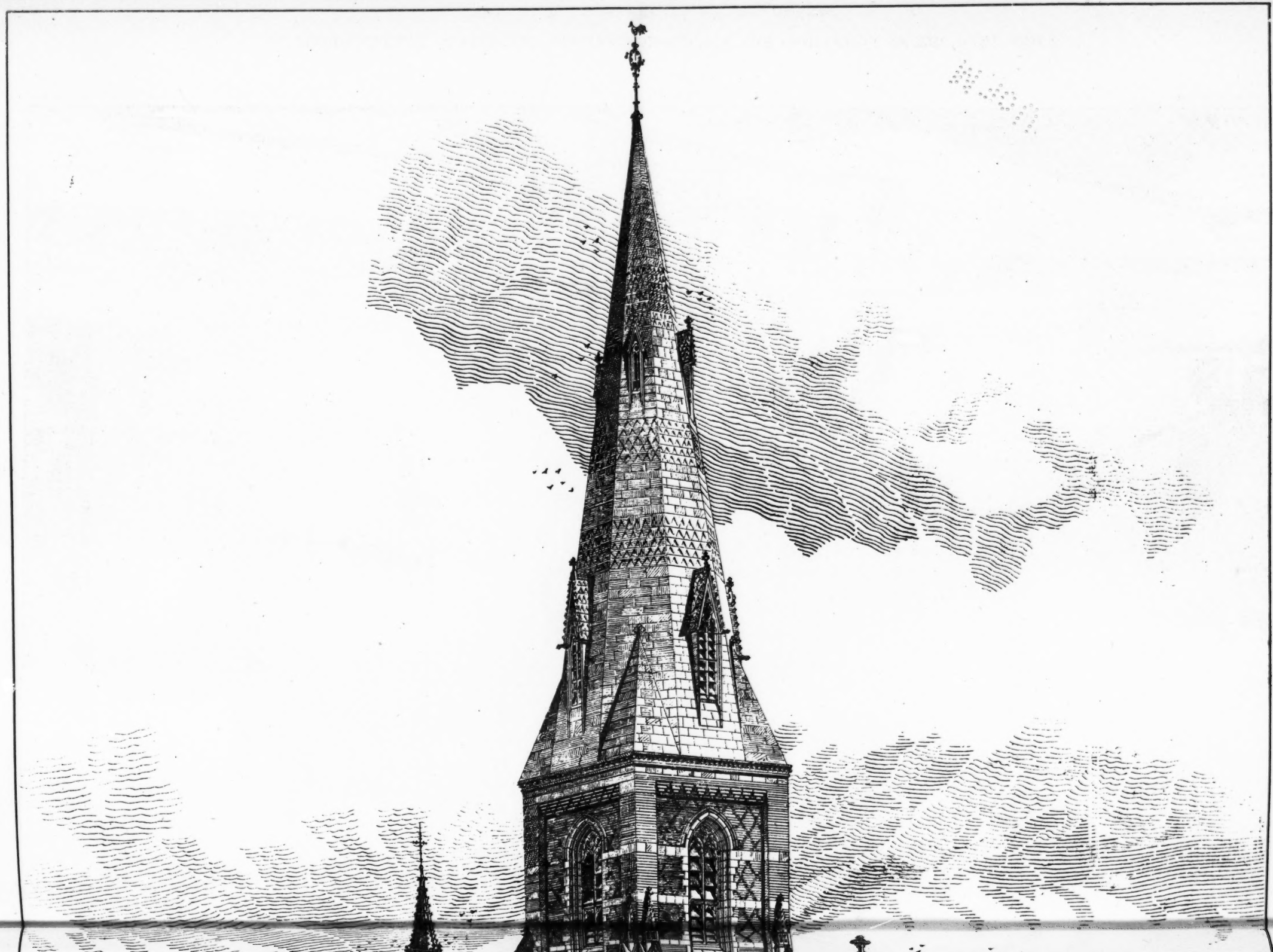
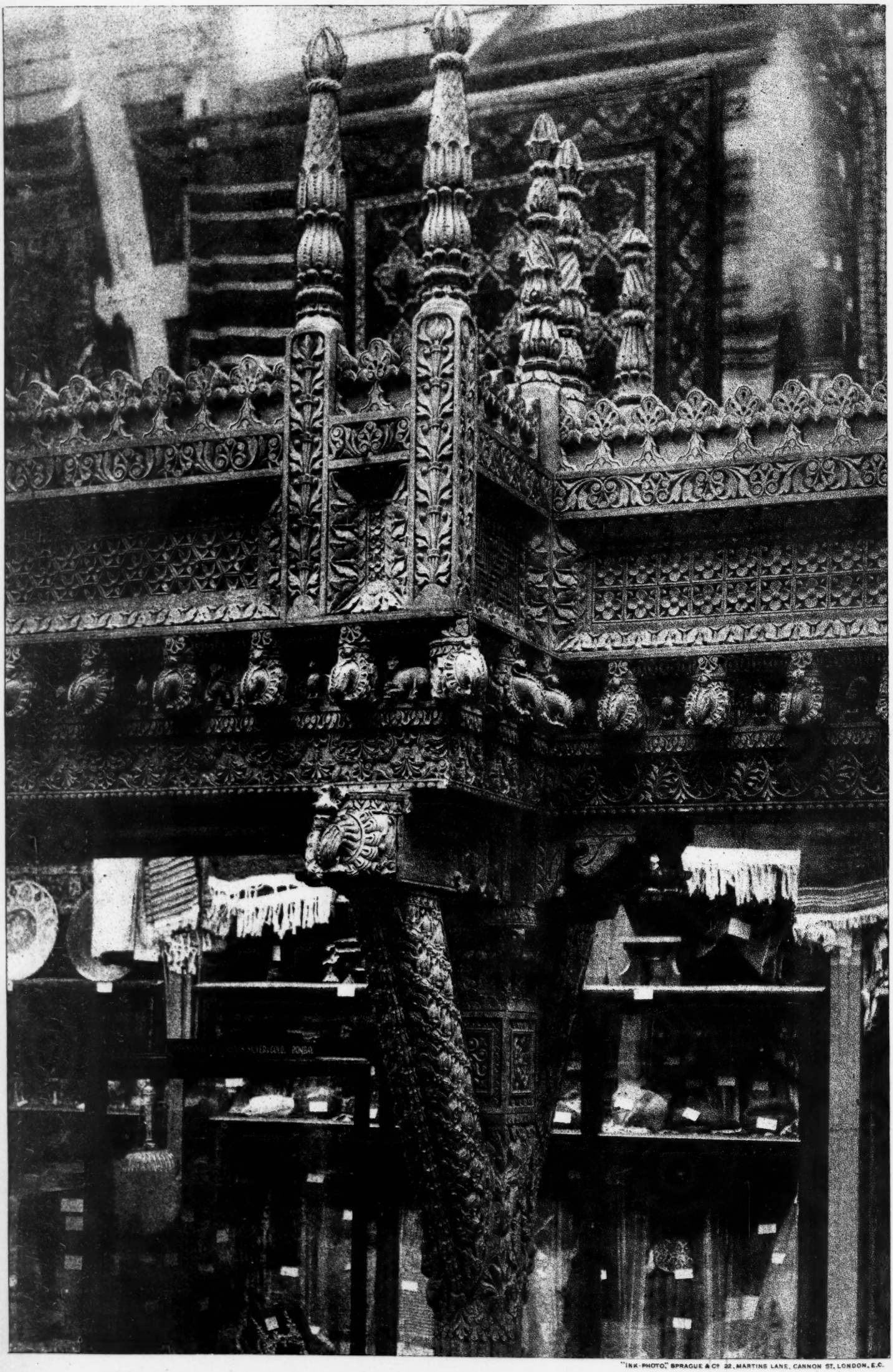
ST. PETER'S CHURCH, STREATHAM: ORIGINAL DESIGN FOR THE COMPLETION OF THE WEST END.

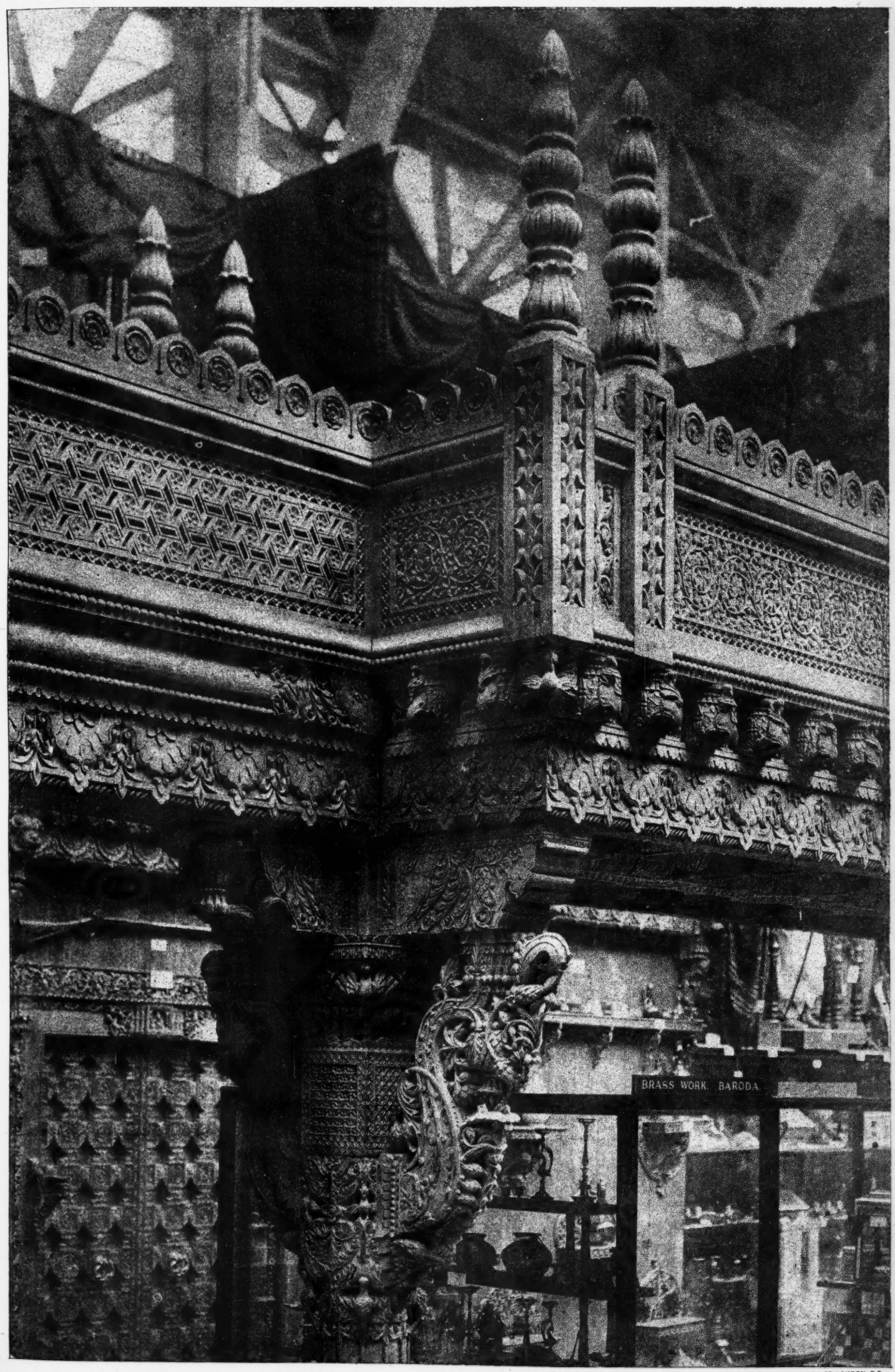
Mr. Geo. H. Fellowes Prynne, A.R.I.B.A., Architect.





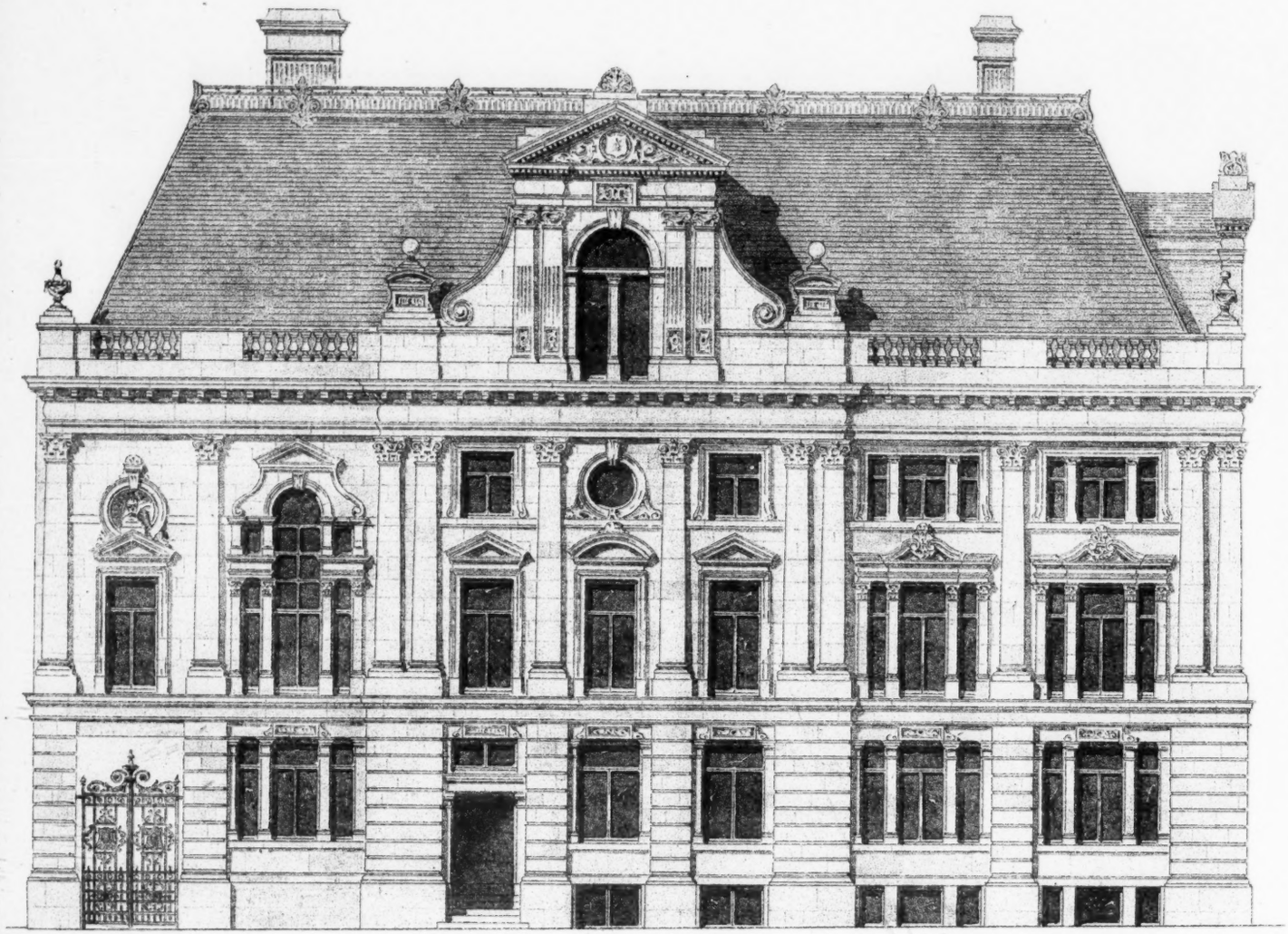
"INK-PHOTO," SPRAGUE & Cº 22, MARTINS LANE, CANNON ST, LONDON, E.C.

GALLERY FRONT AND BRACKET CAPITAL FROM THE BHAVNAGAR SCREEN IN THE BOMBAY COURT OF THE COLONIAL AND INDIAN EXHIBITION.

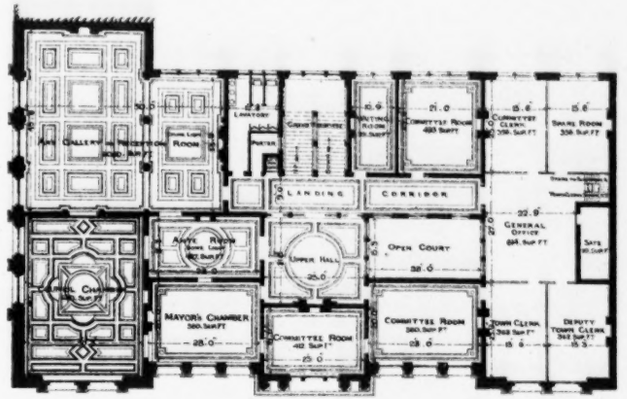


"INK-PHOTO," SPRAGUE & Co 28, MARTINS LANE, CANNON ST, LONDON, E.C.

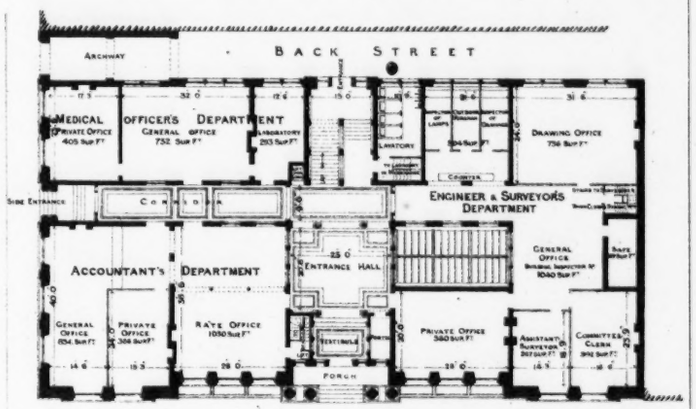
GALLERY FRONT AND BRACKET CAPITAL FROM THE BARODA SCREEN IN THE BOMBAY COURT OF THE COLONIAL AND INDIAN EXHIBITION.



SIDE ELEVATION.



—FIRST FLOOR PLAN.—



—FAWCETT—STREET—

—GROUND PLAN.—

PRINCIPAL ELEVATION,

"INK-PHOTO," SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

SUNDERLAND MUNICIPAL BUILDINGS COMPETITION.

THIRD PREMIATED DESIGN.—MESSRS. DOUBLEDAY AND CAWS, ARCHITECTS.

SANITARY INSTITUTE OF GREAT BRITAIN.

ANNUAL DINNER.

THE anniversary dinner of this Institute was held on Thursday, the 8th inst., at the Holborn Restaurant. The chair was occupied by Captain Douglas Galton, C.B., who was supported by, among others, Mr. Edwin Chadwick, Sir Robert Rawlinson, Mr. Rogers Field, Mr. E. C. Robins, Mr. H. H. Collins, Dr. S. W. North, Prof. H. Robinson, and Mr. E. White Wallis (secretary).

The Chairman proposed the usual loyal and patriotic toasts, Major Flower replying for the "Army, Navy, and Reserve Forces."

Sir Robert Rawlinson proposed "The Houses of Parliament," coupled with the name of Sir Guyer Hunter, who, in replying, referred to the insanitary condition of the House of Commons.

Dr. North, in proposing the toast of the evening, "Success to the Sanitary Institute," said he was happy to be the General Local Secretary for the present year's Congress, to be held at York a month or two hence. He believed the good city of York would extend to the Institute the same cordial welcome it had given to other societies in times past. It was unnecessary to say anything as to the advantage of sanitary science, for the work of the Institute commended itself to the judgment of all thoughtful men. It was now the exponent to the country of sanitary science, and should become the great centre for its diffusion throughout the length and breadth of the land.

The Chairman, in responding, said he was present at the 50th anniversary meeting of the British Association at York, and if the very great hospitality then displayed was an earnest of what the Sanitary Institute would receive, they would never have had a more gratifying reception. This was the tenth year of the existence of the Sanitary Institute, and he believed the members would agree that its progress had been steady and satisfactory. Its objects had always been educational, and it had ever endeavoured to educate the community in matters of sanitary science. One of its most important functions was the annual congress and exhibition, for by these exhibitions, and by careful judging, it showed what was the standard of the sanitary invention of the day. For this they had to thank the gentlemen who were so kind as to give a large amount of time and trouble to the judging of the various exhibits. But it was not merely in holding congresses and exhibitions that the Sanitary Institute had been engaged. One of the most important matters which had been taken in hand by them was the publication, by means of their funds, of Dr. Farr's works, and he hoped they would also be able to publish the works of Mr. John Simon, whose scattered publications were of great value, which would be enormously increased if they could be brought to a focus. He hoped that every one who could, would subscribe to these publications, so that they might be brought out shortly. He was also glad to know that the Sanitary Institute was about to increase its usefulness by uniting with the Parkes Museum, which would enable them to have a permanent museum of sanitary appliances. In doing this they were only fulfilling what seemed to have been the idea of the Prince of Wales when he promoted the Health Exhibition. They proposed to carry on educational work by the delivery of lectures, and to continue the examinations, which had already done a great deal towards improving the sanitary standard of the country.

Mr. Edwin Chadwick proposed the health of "Our Visitors from the Colonies." The presence of these gentlemen that evening denoted their sense of the importance of sanitary science, and they certainly had great need of it. From the first the Colonists had the pressing wants of existence and settlement to attend to, and the sanitary arrangements of their houses and towns were neglected. The consequence was that the finest sites had been destroyed, and an emigrant might leave London with its death-rate of 19 per 1,000, and go to Australia, where the death-rate was much higher, especially amongst the children under five years of age. He was aware that exertions to lessen the death-rate were being made by some of the Colonies; offers had been made to Dr. Richardson to visit the Colonies and expound the means of relief, and that application had been made to the Local Government Board to obtain the services of its chief sanitary officer, who could not be spared. Earl Granville, however, suggested that the next best thing would be that the information issued by the General Board of Health, for the guidance of Local Boards, should be brought up to the latest experience, and supplied to the Colonies for guidance and application according to their local conditions.

Mr. J. Bosisto, in replying, said that the Colonists did study what was being done in this country in regard to sanitation. After an absence of many years from London, he was much struck with the advance of sanitary science in the metropolis.

Mr. E. C. Robins, F.R.I.B.A., proposed "The Visitors," coupled with the name of Mr. Jerram, President of the Association of Sanitary Inspectors. He considered that if the Sanitary Institute had done nothing more than give birth to the Association with which that gentleman was connected, it would have done much good.

Mr. H. H. Collins, F.R.I.B.A., gave "The Officers of the Institute," bearing testimony to the manner in which they had discharged their several duties. Mr. White Wallis especially merited the appreciation of the members for his arduous labours for the Institute.

Mr. G. J. Symons, F.R.S. (Registrar), and Mr. White Wallis (Secretary), replied to the toast.

IMPROVEMENTS IN SHIP VENTILATORS.

MR. ROBERT BOYLE, of Robert Boyle & Son, Limited, Holborn-viaduct, has recently patented an improvement in his well-known downcast ventilator for ships, which, in conjunction with the air-pump ventilator, has been largely introduced into the principal steamship lines of this country and the Continent.

The downcast ventilator, as shown in diagram, fig. 1, can be adapted, so far as the height is concerned, to meet the requirements of naval architects and shipbuilders, which could not well be done with the old pattern, as a certain height in proportion to the diameter had always to be maintained with it. We are informed that extended experiment has demonstrated the new pattern to be a more powerful and reliable downcast, besides being absolutely watertight, it being found impossible to force water down the ventilator, though there is not a single valve employed, and the air passes down freely and unobstructedly. The ventilator is a fixture, there being no movable part about it to get out of order, and it never requires trimming, as it acts with equal efficiency with the wind blowing from any quarter. It never requires to be removed or closed up during stormy weather, as is the case with the ordinary ship ventilator, so that the ventilation of a ship is never stopped or interfered with even though seas may be sweeping it from stem to stern.

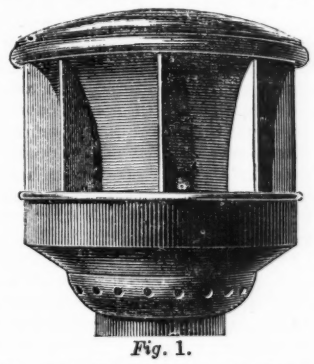


Fig. 1.

Fig. 2 is a diagram of the latest improved air-pump upcast ventilator for ships, which, besides creating a powerful and constant upward current, and being entirely free from down-draught, is perfectly watertight, so that it can always be kept in action.

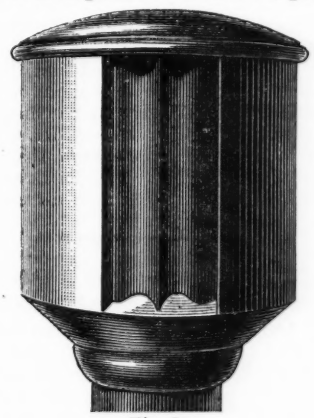


Fig. 2.

Building Land at Bognor.—On Monday last Messrs. Baker & Sons submitted to competition, at the Public Hall, a number of building sites on the Strathnore Park Estate, at Bognor. The property has frontages facing the sea, and being the only remaining building land in that immediate locality of the town, there was a large attendance at the sale. The sites offered were thirty in number, having frontages averaging 22 ft. and a depth of 110 ft., together with an hotel plot having a frontage of 54 ft. to the Esplanade. The whole of the plots offered were sold, those facing new roads receding from the sea realising from 35*l.* to 50*l.* each, whilst those facing the sea commanded from 100*l.* to 130*l.* each. The hotel plot was sold for 315*l.* There being a call by the company present for more plots to be offered eight additional sites were submitted, all of which were sold at prices ranging from 30*l.* to 48*l.* each.

ROYAL ACADEMY.

ADMISSIONS TO THE ARCHITECTURAL SCHOOL.

THE following students have been admitted to the Architectural School of the Royal Academy (Mr. R. Phené Spiers, Master):—

Upper School.

Dennis, L.	Manning, H.
James, F. J.	Selby, E. H.
Leck, W.	Walton, H. D.
Mallows, C. F.	Wilson, C.

Lower School.

Butler, A. M.	Nicolay, G. W.
Daniels, H. S.	Paul, R. W.
Duke, W. M.	Spooner, C. S.
Frere, E. C.	Taylor, N.
Haarer, F. E.	Wilson, W. R.
Hopson, C. H.	Woollacott, H. E.
Murray, J. M.	Youngs, L.

Probationers.

Bance, F. R.	Lanchester, H. V.
Blomfield, A. C.	Oliver, J. P.
Bryden, R.	Page, V. R.
Fletcher, B. F.	Wilson, H. A.
Gregg, H. A.	

LIGHT AND AIR CASE: LARGE CLAIMS BUT SMALL DAMAGES.

SKIVENS V. CLEMENTS, JEAKES, AND CO.

IN this case, which occupied the attention of Mr. Justice Denman and a special jury in the Queen's Bench Division for three days early in this month, the plaintiff kept a common lodging-house in Macklin-street, Drury-lane, and the defendants are the well-known firm of engineers, and occupy adjoining premises.

It appeared that the defendants had lately raised the end of one of their buildings, and plaintiff alleged that the new portion of the structure obstructed the light and air flowing laterally into the ancient back windows of his premises, of which he held a lease the unexpired term of which was five years and a half. He also complained that a small stable had been slightly narrowed by replacing a wood enclosure in brick, and that a pier or buttress had been built a few inches over the boundary of his yard. For these matters he claimed several hundred pounds damages, and in addition prayed the Court to grant an injunction to compel the defendants to pull down the offending portions of their new building.

A number of men who habitually used the plantiff's lodging-house were called on his behalf, as was also Mr. Sewell, architect, and Mr. Harper, surveyor, who all deposed to there being less light and air, especially in the common kitchen, since defendants' new building had been put up.

The defence was that the plaintiff had suffered no damage to his light, and that no trespass had been committed. In support of this view, evidence was given by Mr. Harston (of the firm of A. & C. Harston), architect, and it was stated that Mr. Banister Fletcher concurred, and would have been called, but that, being a candidate for the renewal of Parliamentary honours, his presence was required in Wiltshire. The case was contested at great length (occupying three days) by Mr. Channell, Q.C., and Mr. Davis, on the part of the plaintiff, and Mr. Lumley Smith, Q.C., and Mr. Mitchell, instructed by Messrs. Lee & Pemberton, solicitors, for the defendants.

The Judge requested the jury, if they found any damages, to award a separate sum for each item of complaint, which they did as follows, viz., damage for loss of light and air, 5*l.*; damage for trespass by piers, 5*l.*; damage to stable, 3*l.*; ditto to tank, 1*l.*; total, 14*l.* Defendants had paid 25*l.* into court.

The Judge observed that this was a verdict for defendants, but afterwards proceeding to give judgment for 14*l.* for plaintiff, defendants' counsel objected to that course, and it was ultimately decided that the verdict of the jury should be recorded; but the Judge would give no judgment. Either party could, if he considered it worth his while, move the Divisional Court for judgment. He, however, refused the application for an injunction to pull down.

The result is that plaintiff cannot get the 14*l.* awarded to him, nor can defendants get out of court the balance between the 14*l.* verdict and the 25*l.* paid in, except by going to the expense of moving the Queen's Bench Division of the High Court, nor, until such motion be disposed of, can any decision be arrived at in respect of the more important question of costs.

York Architectural Association.—On Saturday last the members of this Association visited Middlesbrough, and went over the new Town-hall and municipal offices now in an advanced state of construction. The party was conducted over the buildings by Mr. G. G. Hoskins, the architect, and examined with much interest the arrangement and details of the buildings.

SUNDERLAND MUNICIPAL BUILDINGS.

SIR,—I notice in your last issue (p. 48) allusion is made to the fact that the chimneys shown on the plans of my design for the Sunderland Municipal Buildings are not shown on the main elevation. The reason is just what you suppose, they come behind the ridge, and as they would not be seen from the street and would in elevation convey a wrong impression of the effect of the elevation, they have been omitted, though shown in the sections. On the side elevation, which you have not published, the chimneys are placed on the ridge as they come symmetrically, —and, most probably, in execution the chimneys referred to will be carried on the ridge if I find they will not interfere with the symmetry of the design,—as seen from the street.

This does not appear to me to be rightly described as "a competition dodge," but as an endeavour to give as truthful an idea of the effect of the building as can be done by a geometrical drawing.

BRIGHTWEN BINYON.

PROVINCIAL NEWS.

Brighton.—At a special general Court of the Governors of the Sussex County Hospital on the 7th inst., the Chairman (Mr. Hebbert) moved a resolution to the effect that permission should be granted under Statute 67 to erect such additional buildings as might be required by the Committee of Management. He explained that it was proposed to erect an additional building that should contain eight beds for special cases, and six beds for fever cases. With regard to the beds for fever cases, he mentioned that, although most cases were now sent to the Sanatorium, it was eminently desirable that there should be some provision made for cases that might break out in the hospital itself. Two sites had suggested themselves to the committee. One of these was on the hill where the lawn-tennis court at present stood, and the other was the site where the Museum stood. The first was not a desirable place, owing to the difficulty of access, and the question, therefore, arose as to whether the Museum should be enlarged and adapted to the wants of the institution, or whether it should be pulled down and rebuilt. The present building would afford nothing like adequate accommodation, and he thought it would be better to have it entirely rebuilt. It was estimated that the cost would be between 5,000*l.* and 6,000*l.* The motion was unanimously carried.

Gloucester.—From some proceedings at the meeting of the Gloucester Town Council on the 8th inst., it appears that the Council have been in communication with the Dean and Chapter as to the widening of College-street,—a very necessary improvement,—but the Dean and Chapter do not seem at all inclined to co-operate with the Corporation in this matter, though it seems they might do so at no very great sacrifice.

Lewes.—At a meeting of the Lewes Town Council on the 7th inst., the Mayor moved: "That it be an instruction to the Highways and Works Committee to consider the advisability of providing a Public Hall and extending the Municipal buildings at the top of Market-street, and to report thereon to the Council." He said he thought the total cost would not exceed 2,000*l.*, but although there was some difference of opinion on this point, the motion was agreed to.

Lincoln.—On the 6th inst. Mr. Arnold Taylor, Inspector for the Local Government Board, attended at the Guildhall at Lincoln for the purpose of holding an inquiry as to the application of the Lincoln Urban Sanitary Authority for sanction to borrow a further sum of 6,000*l.* for works of street improvement in Lincoln, in addition to the sum of 30,000*l.* which has already been obtained on loan for like purposes. Mr. Hebb, Deputy Town Clerk, briefly explained the objects for which the loan was required, and the inspector promised to report on the application to the Local Government Board.

Richmond, Surrey.—At the recent special Vestry meeting held at Richmond to declare the rates for the ensuing financial year, the Chairman of the Finance Committee said it was a curious circumstance that the rateable value of the parish had not increased on the year. Yet there certainly had been new buildings put up in the parish during that time, and some properties had been improved. These were standing of course at a larger amount in the rate book. The key to the results was found in the fact that very many applications had been made for reduced assessments, and these had counterbalanced the extra amount put in the rate book for new and improved property.

Tipton.—On Monday afternoon last an extraordinary meeting of the Tipton Local Board was held for the purpose of hearing a report on the sanitary condition of the parish from Dr. Gresswell, of the Local Government Board. Dr. Edgar Underhill presided. Dr. Gresswell (according to the report given in the *Wolverhampton Chronicle*) said he found great defects in the present system of sewerage, but was pleased to learn that a complete scheme of deep drainage was about to be constructed. In his survey of the district he found many houses dilapidated, with defective roofs, and little or no provision for the carrying away of household slops and other offensive fluids. Cesspools were unnecessarily numerous, the ashpits too large, and the privies in many cases in bad repair and much too infrequently emptied. At Dudley Port a combination of cesspools and dirt heaps existed at the rear of certain houses, and the stench therefrom was very properly described by one who lived there as "enongh to breed ten thousand fevers." At Princes End he found an ashpit which he was told had not been emptied for years. He found scores of houses absolutely devoid of ashpit accommodation, and the people were obliged to throw their refuse and slops anywhere. He made no complaint of the Inspector of Nuisances, but that official's duties were far too numerous. As had been pointed out by Dr. Ballard several years ago, there was work for two sanitary inspectors at Tipton, but the present officer had also to look after the horses and superintend the removal of night-soil. With regard to the latter he found they had only three men and one horse to remove the night-soil of 30,000 people. He understood that the sanitary and medical officers had not been lax in directing the attention of the Board to these nuisances, but it appeared to him that the Board was rather dilatory in attending to their reports. He found that for years scarlet fever had prevailed to a large extent, and during his visit he found ten cases of typhoid fever in one small court. These and similar diseases originated from insanitary surroundings. He urged upon the Board the necessity of attending to these matters, pointing out that where insanitary conditions existed pauperism ran high. Dr. A. S. Underhill, a member of the Board, remarked that Dr. Gresswell's report reflected seriously upon some of the most respectable ratepayers, and upon past and present members of the Board. Dr. Gresswell replied that his observations were the result of a perfectly impartial survey of the district made by himself, without assistance or direction from anyone.

CHURCH-BUILDING NEWS.

Elton.—All Saints' Church, Elton, Hunts, has recently been restored, at a cost of about 1,500*l.*, which was entirely defrayed by the Earl of Carysfort. The *Peterborough Advertiser* says that the north and south aisle roofs were in a most dilapidated condition. They have been entirely renewed. The porch has been restored, and several other works performed. Mr. Pearson, R.A., was entrusted with the work, which was carried out by Mr. John Thompson, of Peterborough. The church consists of west tower, nave, north and south aisles, and chancel. It exhibits specimens of all the three characteristic periods of Gothic architecture. The nave is the oldest, being Early English. The chancel comes next in point of date, being Decorated, and the tower and aisles are the most modern, being of the Perpendicular period. Previously to the present restoration, it had been considered that the nave was entirely without a clearstory. The aisle roofs came up to the nave battlements on the outside, and on the inside there was nothing but a plain plastered wall. When the builders removed the aisle roof it was discovered that there were three square-headed clearstory windows on either side, which had been blocked up in the last century with masonry, plastered over, and the roofs of the aisles carried up to conceal them on the exterior. Now, however, the aisle roofs have been placed at their proper and original level. The masonry has been removed from the blocked-up windows. The tower rises to a considerable height, and has four stages. It is built of ashlar, which has weathered into a variety of hues, producing a very pleasing effect. The work of restoration has not touched this. The old vestry has been converted into an organ-chamber. The new organ has been built by Messrs. Lewis & Co., of London, the case having been designed by the architect.

Flixborough.—The new Church of All Saints, Flixborough, Lincolnshire, was consecrated on the 30th ult. The church, which has been erected from the designs of Mr. C. Hodgson Fowler, F.S.A., of Durham, is Late Decorated in style, with a spire of timber covered with lead. The chancel roof has been decorated in colour by Mr. Powell, of Lincoln. The walls of the nave are finished with smooth white plaster. The walling stone is from a pit of ironstone in the parish, and the dressed stone from Park Nook, near Doncaster. The cost of the church will not exceed 1,700*l.*

Givendale (*Pocklington*).—The church here was re-opened after re-fitting on July 7th. The chancel floor has been laid with lozenges of Tadcaster stone and slate. New oak stalls, pulpit, and nave benches have been provided, also oak reredos with cornice filled with pateræ, new heating apparatus, and vestry. The architect is Mr. Temple L. Moore, of Hampstead, and the contractors Messrs. Shepherdson & Sons, of Driffield. Mr. Renton Gibbs supplied the heating apparatus.

Glastonbury.—The restored and enlarged Church of St. Benedict (originally dedicated to St. Benignus, the scholar and successor of St. Patrick) was re-opened on the 8th inst. by the Bishop of Bath and Wells (Lord A. Hervey). For many years the edifice has been falling into decay, and in June, 1884, a public meeting was held in the Town-hall, when Mr. and Mrs. Austin's and Miss Holman's conditional offer to bear the expense of a new south aisle, at a cost of 800*l.*, was made and accepted; other subscriptions were promised, and after a time, and the collapse of part of the roof during service one Sunday morning in January of last year, plans were obtained from Mr. Sedding, the Diocesan Architect, and the work was placed in the hands of Messrs. Merrick & Sons. On the 14th of May, 1885, the pillar stones of the new south aisle were laid. The builders worked with energy, and by Christmas, 1885, the church was sufficiently restored to be occupied by the congregation, the first service being held on Christmas Day. The estimated cost of the work is:—General restoration of the church, about 1,050*l.*; the tower, 300*l.*; and the new south aisle, 800*l.*, besides architect's commission and expenses; and of this a good portion has been raised. The restoration comprises the rebuilding of the greater portion of the tower and of the exterior wall and battlements, new roofing and seating, and in addition to this pinnacles have been added to the tower, and a new south aisle has been erected.

Lewis Town.—On the 2nd inst., Mr. W. Lewis, of Bontnewydd House, laid at Lewis Town the corner-stone of a new church, which has been named St. Mary's Church, and will meet a long-felt need in the district. Lewis Town is one of the outlying districts of the parish of Gelligaer, at the entrance of the south end of the Taff Bargued Valley, and is rapidly becoming an important place, owing to the Harris Navigation Colliery, on the banks of the Taff Bargoed river on the opposite side, becoming an important steam coal colliery, at which several hundreds of hands find employment. The site upon which the church will stand belonged to the Bontnewydd estate, and has been given by Mr. Lewis. The church will consist of a nave and chancel, with an organ-chamber on the south side and a vestry on the north side of the chancel, and a porch. The church is Gothic in style, and the walls will be built of local blue Pennant stone, with Pencoed best pressed brick and Dumfries red stone facings. Inside, the arches over the organ-chamber, vestry doors, and chancel-arch, as well as the font, will be of Bath stone. The church is being built from plans prepared by Mr. E. M. Bruce Vaughan, of Cardiff, and Mr. Haine, builder, of Cowbridge-road, Cardiff, has been entrusted with the contract, the amount of the same being 965*l.*

Appointment.—Mr. Fredk. West, architect, of Croydon, was, on Tuesday last, appointed Surveyor to the Guardians of the Croydon Union.

DISSENTING CHURCH-BUILDING NEWS.

Croydon.—The West Croydon Congregational Church was opened on the 6th inst. It is designed in the Early Decorated style, and consists of a nave with central passage, two side aisles, double transepts, and deeply-recessed apse, with choir-stalls on either side, pulpit on the left, and organ-chamber on the right. Externally the church is faced with Kentish rag, with dressings of Monks Park Bath stone, while Farleigh Down stone, relieved with bands of blue Bath, is used on the inside. The building is ventilated by fresh-air inlets in walls, and Boyle's extractors in roof. The nave columns are of Portland stone, and all the fittings are in pitch pine. There are spacious vestries at the rear, as well as a large church-parlour. The cost of the building has been 10,800*l.* Among the gifts which have been made to the church may be mentioned a Caen stone pulpit, with marble and onyx shafts, presented by Miss Peacock, of Grosvenor House, Thornton Heath, at a cost of 300*l.*, and executed by Mr. S. Sansom, of Kennington-road, Lambeth, from designs by the architect; Mr. Sansom also presented a table font, supported on a column of very rare marble, and richly carved, besides which Mr. Sansom executed the carving to the entire building. Mrs. P. A. Peacock gave a stained-glass west window, executed by Mr. Frampton, of Buckingham Palace-road, at a cost of 500*l.*; while a clock and chimes, and a peal of eight bells, were given by Mr. J. S. Balfour, J.P. These were supplied by Messrs. Gillett & Bland. The organ is by Messrs. Hill & Son. The warming of the church was carried out by Mr. T. Boulting, of Union-street, Middlesex Hospital; the lighting by Messrs. Vaughan & Brown, of Farringdon-street; the glazing by Mr. W. Gibbs, of Blackfriars-road; and the tile pavements were supplied by Messrs. Smith & Co., of Coalville, Leicestershire. The whole of the Bath stone was from the quarries of Mr. I. Sumsion, of Bath. Mr. Lawrence was clerk of the works, and Mr. Jones foreman to the contractor. The whole of the building was designed and carried out under the superintendence of Mr. W. D. Church, architect, of South-place, Finsbury. Mr. J. Holloway, of Marmion Works, Lavender-hill, Wandsworth, was the builder, and he completed the building in three months less than the contract time.

Hednesford.—On the 5th inst. the foundation stones of a new Primitive Methodist Chapel at Chase Town were laid by Sir J. Swinburne, Bart., and Mr. T. Harrison Evans, of Walsall. The building is to be of red brick, with stone facings, and will cost about 800*l.* Mr. J. Short, Chase Town, is the architect, and Mr. T. Mason, of Hednesford, the builder.

The Roman Remains at Bath. — The blending of ancient Roman and modern building skill is much more apparent now at the baths, owing to a recent discovery. It may be remembered that when the Gloucestershire Archæological Society paid a visit to the Roman baths, Major Davis expressed an opinion that the greater part of the south wall of the King's Bath was Roman work, including the outline of an arch embedded therein. Since the commencement of the building around the antique circular bath, the City Architect has had drawn a portion of the wall enclosing the arch, with the result that the latter is, he is convinced, unquestionably Roman. It is about 2 ft. 9 in. thick, and so well preserved that the upper part of it is to be left open for inspection and to admit light. The bold curve of the arch will thus form a central and harmonious object at the northern end of the apartment which will enclose the circular bath. Its dimensions, including the pillars supporting the arcading, are 76 ft. in length by 40 ft. in length, or about the same size as the banqueting-room, the difference being that the latter is 4 ft. longer. A small ledge in each pillar shows where the ancient work ends and the new begins,—an arrangement that will prevent confusion and misapprehension. Should the City Architect's views be accepted, they must tend to modify, to some extent, the theory of the complete effacement of the Roman balneal structure, since a portion of it must have stood and been incorporated by the Mediæval restorers of the baths. — *Bath Chronicle.*

The Student's Column.

STONE QUARRIES.—III.

DISTRIBUTION OF THE METAMORPHIC AND IGNEOUS ROCKS.

IN the last article we gave an outline of the classification, extent, and development of the aqueous rocks. We shall now endeavour to show the position of the archæan, metamorphic, and igneous rocks, with reference to them, but shall not attempt to classify further, as the divisions already proposed are enough for our purpose.

Broadly speaking, we find, underneath the Cambrian, those called Archæan which, in most cases, are highly altered rocks of pre-Cambrian age. The nonconformity that exists between these two great divisions is probably the greatest in the world, for the archæans had time to become metamorphosed and denuded to a very large extent before the lowest Cambrian beds were deposited; and pebbles formed of these archæan rocks are found at the base of the Cambrian, at many places in Wales,—a good proof of their existence prior to Cambrian times.

From the fact, however, that certain portions of the archæans are composed of lavas and other igneous rocks, not very much altered, and because of the extreme difficulty, in some cases, in the absence of palæontological evidence, of determining the base of the Cambrian, some geologists have considered that many of the rocks now classed as archæan were eruptive and intrusive rocks of subsequent periods. Now, it is quite certain that igneous rocks of Cambrian age exist, and in the same areas as the archæan rocks, but these must be put aside as quite distinct and separate from those of archæan age, especially when the pebble bed exists of the composition and in the position alluded to. When an igneous mass bursts through sedimentary strata, it always more or less alters the surrounding rock by baking it, but it never produces a pebble bed of its own composition at the points of contact, a phenomenon required by those who do not admit the archæan age of the rocks. A pebble bed could only be formed by denudation of the mass in the ordinary manner after its consolidation.

We enlarge on this point to show that although many of the stones quarried in the archæan series in Wales are known in the market as granite, they are not granite at all. The more crystalline varieties have frequently a granitoid structure, such, for example, as that quarried at Twt Hill, Carnarvon; but the foliation which they exhibit entitles them to be called granitoid-gneiss rather than granite. Again, there is a total absence of mica in some of these crystalline rocks.

Archæan rocks are found in the Wrekin, Malvern Hills, Charnwood Forest, and Cornwall, in England; North and South Wales; the North-west and Grampian Mountain areas of Scotland; and towards Lough Foyle, and perhaps in Wicklow, in Ireland.

Of the other metamorphic rocks, slate is the most important. The principal slate quarries are situated in North Wales, especially in Carnarvonshire. Others are found in Cornwall and Devon, at Delabole, Tavistock, &c. Slate also comes from upper Silurian rocks near Kendal, at Ulverstone and Skiddaw in the Lake district.

Scotch slates are found near Perth, Dalbeattie, Crieff, Forfar, Aberdeen, and Inverary.

Irish slate quarries are situated at Corbally, in lower Silurian rocks (called Killaloe), from Valencia in the Devonian series, and in lower carboniferous beds at certain places in county Cork. Slates are also worked at Carrick-on-Suir and Ashford Bridge.

We will now turn our attention to the crystalline igneous rocks, the most prominent member of which is granite.

It was not so very long ago that granite was thought to be the oldest rock in existence at the surface of the earth; in fact, it was made to occupy the position now held by the archæans. But, thanks to patient research, it is now known that it may be of very various ages, and even granite of middle Tertiary age has been exposed to the surface. The only reason why it is not found of still more recent age is because the great thickness of superincumbent rocks, necessary for its formation, have not yet been long enough subjected to atmospheric agencies to become denuded sufficiently to bare the granite underneath.

Bearing these things in mind, we must not be surprised that the granites of the British Islands, although having a somewhat kindred origin, are of different ages.

The principal granite quarries of England are situated in Cornwall and Devon, and at Shap in Westmoreland. The rock also occurs in the Scilly, Lundy, and Channel Islands. Syenitic granite is worked round Mountsorrel, and at Charnwood Forest, near Loughborough.

Sir H. de la Beche has shown that the granites of Devon and Cornwall are of an age intermediate between the Triassic and lower Carboniferous periods. Many tracts of granite in this area rise through Devonian and Carboniferous strata, the evidence being very clear.

The principal granitic bosses range from the Scilly Islands to Dartmoor. That the various slates, sandstones, calcareous and trappean rocks which at present bound these granite bosses, and smaller patches, existed prior to the intrusion of the granite, is shown by the displacement of these rocks by the latter, by the mode in which minor groups of them are sometimes cut off by it on the line of strike, and by the granitic matter which has been driven from the bodies of it into cracks and fissures formed in these adjoining rocks.* The strata in the vicinity of the bosses are metamorphosed.

Scotch granites are chiefly quarried in Aberdeenshire, Kirkcudbrightshire, Argyleshire, Arran, and Mull. In a lesser degree, it is also obtained from parts of Perthshire, Banffshire, Sutherland, and in the Hebrides.

The two areas in Aberdeenshire, where granite is worked, are in the vicinity and to the northward of Aberdeen, and around Peterhead. Haughton thinks that the former granite is much more ancient than the latter.†

Granites occur in the South of Scotland in the lower Silurian tracts. The strata in some cases do not dip away from them on all sides, but, with trifling exceptions, maintain their normal north-east and south-west strike up to the granite on one side, and resume it again on the other. The granite, indeed, has not merely pushed aside the strata so as to make its way past, but actually occupies the place of so much Silurian rock, which has disappeared as if it had been blown out or melted up into the granite. There is usually a metamorphosed belt of about a mile in width, in which, as they approach the granite, the stratified rocks assume a schistose or gneissoid character. Numerous small, dark, often angular patches or fragments of mica-schist may be observed in the marginal parts of the granite. Occasionally granite veins protrude from the main masses, but in the metamorphosed zone which surrounds the Criffel granite area in Kirkcudbright, hundreds of dykes and veins of various igneous rocks occur.‡

Granite is chiefly obtained in Ireland from the following districts:—Donegal, Galway, Wicklow, Wexford, Dublin, in the mountain ranges of Mourne, at Newry, Slieve Croob, Carlingford mountain, Belleek, co. Fermanagh, and in a few islands.

The granites of Galway are associated with strata probably of lower Silurian age. The most extensive granite district in the British islands is to be found in Ireland. It stretches south from Dublin through the counties of Wicklow and Carlow into Kilkenny and Wexford, and occupies an area about 70 miles in length and from 7 to 17 miles in width. This mass supplies an admirable illustration of the relation between granite and the surrounding rocks. The lower Silurian strata in which it is found was apparently contorted before the granite made its appearance. Patches of lower Silurian beds that lie on it, at distances from the main mass, occur in such a manner as to bear no apparent relation to the movements which it could have produced. For a mile or more, the aqueous rocks which surrounded the mass have been made into mica-schist (a metamorphic rock), whilst veins from the central mass pierce it in several directions.

The granite of the Mourne district is of great interest, although it is not much quarried. It is an example of granite that has forced its way *en masse* into its overlying rocks. Prof. Hull, in speaking of it, says it is, in that sense, truly irruptive, and seems to have been intruded amongst the stratified rocks in a state bordering

* Rep. on Geology of Cornwall, &c. (1839), p. 165.
† Proceedings Royal Society, xviii. (1870).
‡ Geike, "Text-Book of Geol." (1882), p. 543.

on solidity, and with a temperature only sufficient to indurate, but not to completely metamorphose the Silurian rocks by which it is surrounded, and, in some places, surmounted.* Nevertheless, it would appear that along the outer margin and in extruded veins it passes into a quartz porphyry,†—a rock made fundamentally of a very fine-grained ground mass, composed mainly of orthoclase felspar, and quartz, through which some of the minerals are crystallised in conspicuous forms.

The granite of Carlingford mountain, which in some parts is syenitic, is thought to be newer in age than the carboniferous period, and it is seen penetrating carboniferous limestone.

The syenite quarries of Great Britain are few in number, but are mostly very well known in the market, because of the excellent road metal some of them produce. Patches of syenite exist scattered over our islands, notably in the Malvern Hills, Mountsorrel district, four or five places in North Wales; Strontian, Argyleshire, and Isle of Skye, in Scotland; in Donegal and the Carlingford mountain in Ireland; and lastly, but not least, in Jersey and Guernsey. It is from the two latter islands that the well-known tough road-metal comes.

We will now say something of the non-crystalline igneous rocks or lavas. Many large Continental towns are built largely of the compact lavas and tuffs quarried in their vicinity; but although we have plenty of such rocks in our islands they have never been quarried to any great extent. This arises principally from the fact that so many kinds are not durable and require very careful selection, and unless judiciously arranged they have not a very attractive appearance. In some districts, however, they are used for building and road metal. They occur principally in the Lake District, Bardon Hill (Leicestershire), in Devon and Cornwall, South of Durham, and North of Yorkshire; North and South Wales; the Cheviot Hills; Arran, Mull, and many parts of Scotland; North-east of Ireland; and dotted here and there in most of the granite districts.

Books.

Die alten Kyprier in Kunst und Cultus. Studien von Dr. A. E. J. Holwerda. Mit mehreren lithographischen Abbildungen und einer Lichtdruck-Tafel. Leiden, Brill. 1885.

IT has been too much the fashion to regard the art of Cyprus as valuable chiefly because it reflected in succession the arts of Egypt, Assyria, Phœnicia, and Greece. This misconception Dr. Holwerda sets right. He shows that from its earliest rise down to the fourth century B.C. there is in Cyprian work a clearly recognisable element which is neither Egyptian, Assyrian, Phœnician, nor Hellenic. To the analysis of this proper and peculiar Cyprian factor he devotes the most important section of his book. He gives, however, also an interesting discussion of the well-known bronze bowl of Idalium, with its frieze representing a sacrificial ceremony. This ceremony he believes was in honour of the Cyprian Aphrodite. From this bowl he proceeds to an interesting survey of the general custom of votive offerings, and more especially of the custom of offering the portrait of the worshipper. The book is illustrated by seven lithographic plates and two heliotypes, including a reproduction of the famous bowl. It should be read by all who are interested, not only in the art of the East, but by those who are concerned to unravel the complex influences that acted on the development of archaic Greek art. It has this further interest for English readers, that Dr. Holwerda's views are avowedly based on a careful study of the Cyprian antiquities of the British Museum.

Adolf Boetticher. Olympia das Fest und seine Stätte nach den Berichten der Alten und den Ergebnissen der deutschen Ausgrabungen. Mit 95 Holzschnitten und 21 Tafeln in Kupferradierung, Lichtdruck Lithographie, &c. Zweite durch gesehene und erweiteste Auflage. Berlin: Jul. Springer. 1886.

IT is a sign of the constantly-increasing interest in archæological matters that a second edition of Dr. Boetticher's popular book on Olympia should be required, and we are glad that he has taken the opportunity to enlarge the scope of the work, and, especially in the matter of illustration, very materially to improve it. The metope reliefs of the Zeus Temple have entirely fresh woodcuts; the head of the Hermes of Praxiteles is beautifully reproduced. Grütner's restoration of the Nike also appears for the first time, and the portrait statue of an Elean woman with the signature of the Athenian sculptor, Dionysios, son of Apollonios. It is, however, in the increased number of its architectural plans that the new edition is most noteworthy. The Exedra of Herodes Atticus is now amply illustrated, and many details about the various treasure-houses have been added. The principal additions to the text occurs in the discussion of the buildings of Macedonian times, and in the sketch given of the history of Olympia during the Middle Ages. The book is not so widely known in England as it deserves, even for non-German readers it is a valuable possession on account of its wealth of illustrations, by a study of which, in connexion with the Olympian casts of the South Kensington Museum, a very good notion of the principal discoveries may be obtained.

The Iron Process: a Certain, Simple, Cheap, and Effectual Remedy for the Danger, Nuisance, Cost, and Inefficiency of the Methods now adopted for dealing with Sewage. By FRANCIS R. CONDER, M. Inst. C.E. Guildford: Billing & Sons. 1886.

MR. F. R. CONDER, C.E., proposes to treat town sewage with sulphate of iron. He has gone, indeed, a little further than a bare proposition, having taken a patent for the process, and applied it, on a small scale, at Guildford and Stratford at Bow, as stated in the pamphlet above named, and has procured from Mr. G. Midgley Taylor, F.C.S., an analysis of sewage treated with the anhydrous sulphate of iron, by which he finds that "the putrescent character of both precipitate and effluent is entirely removed, and all germs are destroyed by the iron, as far as microscopic analysis has yet been carried." The use of sulphate of iron is not new, as Mr. Conder no doubt knows; it formed a principal ingredient in the process patented in 1867 by Mr. Bonneville on behalf of Messrs. Houzeau & Devedeix, and goes by the name of Holden's process, from having been adopted by Mr. Angus Holden, of Bradford, Yorks., and by him recommended for general use in dealing with town sewage, but it was expressly declared by that patent that lime was to be used with the other ingredient. Now lime produces in the sludge deposited, and in the water flowing off, characters which are objectionable, and Mr. Conder uses the iron only, which we think may answer very well if it can be thoroughly incorporated,—a small quantity of iron with a large quantity of sewage. This requires either a long time or powerful machinery, and either of these involves expense, for time means tank room. Several good processes have been invented for the clarification of sewage water, but when put into practice they become of no effect, because town authorities omit the more expensive ingredient and fall back upon lime alone, which is cheap; it serves, however, the purpose of town authorities in showing to the Local Government Board that they are doing something.

The Mechanics of Materials, and of Beams, Columns, and Shafts. By MANSFIELD MERRIMAN. New York: John Wiley & Sons. London: John Trübner & Co.

THIS is one of an already large and ever-increasing class of books prepared by the professor for the class-room. On the first page we are informed that "The principal materials used in engineering constructions are timber, brick, stone, cast iron, wrought iron, and steel,"—information practical enough, if not very original or exhaustive. We are further informed, by means of a table, that the average weight of "timber" is 40 lb. per cubic foot, and its specific gravity is 0·6; whilst "stone" weighs 160 lb. per cubic foot, and has a specific gravity of 2·6. These figures are to be "carefully memorised" as "a basis for more precise knowledge," and "unless otherwise stated are used in the examples and problems in the book." This will give a good idea of the method of the book. With regard to the manner it is only necessary to state that Professor Merriman has a scholarly talent for clear and simple explanation. The resistance and elasticity of materials is first dealt with. The definitions of stresses and strains are given in the usual way. The application of these principles to pipes, cylinders, and riveted joints is next discussed, after which come a couple of chapters on simple beams and cantilevers, and on restrained beams and continuous beams. The compression of columns, the tension of shafts, and results of combined stresses are duly considered, and the book ends with an appendix and some tables of constants. All these subjects are treated from an academical point of view, and to the student who already possesses a fair knowledge of mathematics the exercises set will afford an excellent means of sharpening the understanding and exercising the powers of the mind generally.

A Manual of Mechanics. By T. M. GOODEVE, M.A. London: Longmans, Green, & Co.

THIS is an excellent little book, treating of a variety of subjects that lie at the root of the mechanic's craft. It has but two faults: the first, a rather serious one, that there is no index; and the second, which is aggravated by the first, that it embraces too wide a field of research. These defects render the book unsuitable for the purposes of reference; for, although it contains much excellent information, it is difficult to know where to pitch on it. However, the work is declared to be for the use of students, and has, therefore, we suppose, been prepared more for the class-room than the workshop. We can hardly find fault with the author for the class of readers he selects, but we cannot help regretting that so much facility and clearness of expression should not have been put to more practical account. The book opens with an introductory chapter on the properties of matter, measures of velocity, the laws of motion, and measure of force. The author follows the beaten track, and clearly in such matters as these there is little new to be said. The principles of the parallelogram of forces, of gravity, conversion of motion, &c., lead up to the application of natural laws to the science of mechanics, a large number of illustrations from practical work being given.

The Practical Mechanic's Workshop Companion. By WILLIAM TEMPLETON. New edition, revised and enlarged by WALTER S. HUTTON. London: Crosby Lockwood & Co.

OUR old familiar "Templeton" comes to us in a new guise. Years before the numerous modern engineers' pocket-books, and such-like compilations were born or thought of, Templeton was the only friend that the mechanic could call his own. But, like other faithful servants, "Templeton" became somewhat rusty in the course of many years' work, so that when younger and more vigorous rivals arose, he gradually became less and less consulted. The publishers have, however, recast the work, and added to it such information as will bring it up to the requirements of to-day. There are all the old tables, and, so far as our memory carries us,—for we must plead guilty to some ingratitude to our old servitor, which has dropped out of sight during the last few years,—the first part of the book remains very much as it was of old. The "Simple Practical Questions," the chapter on Geometry, the "Mensuration of Solids," and such-like elucidations of knotty points in the smallest compass, will doubtless be again and again referred to by the budding engineer or hard-handed mechanic, as they have been so often in times past,—unless, indeed, science-classes and technical education shall render text-books of any kind unnecessary.

Tables are, of course, given of diameters, areas, and circumferences of circles. Squares, cubes, roots, and reciprocals occupy a considerable space. The book has been so far brought down to date as to treat of the gas-engine and compound locomotive engine. Prof. Kennedy's riveting experiments are also quoted at some length. We find no mention of triple compound engines; or, for that matter, of marine engines of any type. The Galloway boiler is illustrated, but no illustration is given of any other class.

A Treatise on Friction and Lost Work in Machinery and Millwork. By ROBERT H. THURSTON, A.M. New York: John Wiley & Sons. London: Trübner & Co.

THE work undertaken by Professor Thurston is one of great importance, to which too little attention has been paid. The millowner or manufacturer studies how to reduce expenditure

* Building and Ornam. Stones (1872), p. 44.
† See horizontal section, No. 22, Geol. Surv. Ireland.

in many ways; by economy in first cost of coal, by better combustion of fuel, by increased efficiency of heating surface of the boiler, or, in the engine, by compounding the cylinders, by higher pressures and piston speeds, but too often loses more than the gain obtained by such efforts in an unscientific train of gearing, or undue friction of moving parts. The reason of this is not far to seek. The generation of steam and the best manner of using it in the steam-engine have always been favourite studies both with men of science and practical engineers; and their importance is too often insisted on to be neglected. Efficiency of the moving parts appears, however, not to have the same fascination for the majority of those persons manufacturers mostly depend upon for counsel and instruction, although, when it is remembered that fifty per cent. of the total power supplied is often lost in this way, its commercial importance will be duly recognised. It is for these reasons that the book in question is additionally welcome.

Although Professor Thurston cannot claim to have done for the mechanic what Froude did for the naval architect by original research and experiment, he deserves our thanks for having brought together so much useful information between the covers of a single volume. The first part of the work is devoted to the nature and theory of friction, in which the question is efficiently and simply handled. Although there is a great deal in this section that any person of ordinary intelligence will be able to follow, it stands to reason that to follow so complex a subject right through requires a higher mathematical knowledge than is generally possessed by those who are not professional engineers.

In the chapter on lubricants the different materials most commonly in use are treated of, and their values in various situations assigned. Sperm oil is given the first place as a general lubricant for bearings, but its high price precludes it from being used generally. Lubricators of various sorts are also treated of, some of the newest kinds being illustrated in this section. The work concludes with the details of a number of experiments on the friction of surfaces, and some remarks on the "Finance of Lost Work."

Calvert's Mechanic's Reference Book of Practical and Entertaining Information for Handicraftsmen. Manchester and London: John Heywood. Manchester: John Calvert. 1886.

THIS is, in fact, a reprint of Calvert's Mechanic's Almanac from 1880 to 1885. It contains a great deal of information arranged (or not arranged) in a rather hap-hazard and miscellaneous manner. We doubt if these miscellany collections do anything to promote real study, but they are sometimes useful for reference when a bit of special information is wanted, and when well indexed, as this volume appears to be.

The "Practical Treatise on Mensuration" appended to the volume has, however, a distinct and appreciable value.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

10,021, Revolving Shutters. A. Dufrène, Paris.

To obviate the noise in shutters of corrugated metal, which noise is occasioned by the space which it is requisite to leave between the shutter and its guides, improvements are introduced into their construction. Bands or strips of suitable section, so as not to impede the rolling, move in guides only large enough to permit a sliding movement of the bands therein. In this manner the play being considerably reduced the noise is prevented. One or more bands of steel are fitted to shutters of great width in order to give rigidity to the shutter.

7,362, Shop Counters. W. Parnall.

The object of this invention is to provide doors in the counter, which is of the usual shape, so that the contents may be withdrawn and placed in cold-air or ice chambers constructed also in the counter. The front top edge or angular corner is cut away to allow show-cases, biscuit tins, &c., to be placed therein.

5,393, Stop for Doors and Windows. A. Spencer.

The seating for the rubber stop or cushion is shaped in such a manner that when the screws that fasten the holder down are tightened, the base of the indiarubber cushion is forced into the shape of a collar, thereby preventing the possibility of pulling the rubber stop or cushion out.

12,470, Whitewash Brush. T. Murphy.

This device is intended to remedy the defect in brushes of the ordinary make, where the handles are weakened by the cutting of apertures for the reception of the knots of bristles, and are liable to split. Whitewash or distemper brushes are usually made of two or three knots, that is, separate bundles of hair, placed side by side in a single row. These "knots" are attached to a flat wood handle in such a manner that the wood is in the centre, the hair being firmly bound to it with wire or twine. To leave space for this binding or tying, a slot or opening is made in the wood handle between each knot, which causes the tendency to split. The improvement consists of a shield or plate of metal, leather, or some other strong substance placed on one or both sides of the handle, and surrounding or traversing the apertures, and braced or fastened, so that, should a fracture take place in the wood, the handle cannot separate, and the usefulness of the brush remains unimpaired.

NEW APPLICATIONS FOR LETTERS PATENT.

July 2.—8,665, W. Barraclough, Safety Locked Door Chains.—8,676, W. Temple, Mouthpiece for Horizontal Brickmaking Machines. — 8,697, S. Johnson, Sanitary Arrangement for Water-closets, &c.—8,699, R. Melhuish, Woodworker's Cramp.—8,713, M. Blanchard, Ornamental Tiles, &c.

July 3.—8,725, J. Bennett, Pigments.—8,731, E. Abate, Stoves.—8,747, J. Aniello and Others, Anti-fouling and Preservative Paint or Varnish.

July 5.—8,763, S. Ingham and Others, Multiple Wood-turning Machine.—8,765, R. Adams, Fittings for Convertible Sashes, &c.

July 6.—8,790, J. Evans, sen., Bench Vices.—8,793, G. Schultz, Window Fastenings.—8,797, T. Thorp, Glass Enamelling.—8,818, M. Rothschild, Mortising Machines.—8,837, F. Lyte, White Lead.

July 7.—8,872, W. Potter and Others, Hinges and Door Closers.—8,873, E. Grach, Dressing Stones, Tiles, and Flags.—8,876, H. Hennes, Self-acting Fastenings for Doors and Windows.—8,886, J. Price and J. Wayne, Fire Grates.—8,889, W. Dryden, Fastening Window Sashes.

July 8.—8,919, J. Hart, Locks, Latches, &c.—8,937, E. Hiscox, Connecting Gas, Water Pipes, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

4,887, S. Giles and W. Petrie, Decorating Lincrusta Walton, &c.—5,316, W. Allen, Automatic Syphon for flushing closets.—5,697, H. Weinreich, Ground-brushes for Painting.—6,091, C. Sluyterman, Preventing Shocks in Water Supply-pipes.—6,100, W. Macfarlane, Water-closets.—6,176, J. Deeley, Flushing Cisterns.—6,653, J. Higson, Riddles for Brick-making, &c.—6,865, J. Asbury, Traps for Drains, &c.—6,920, E. Edwards, Pneumatic Apparatus for Actuating Doors, Bolts, &c.—7,114, R. Stoffert and T. Dykes, Girders.—7,292, W. Brenton, Sash Fastener.—7,307, W. Verity and J. Walker, Construction of Floors.—7,326, E. Breething, Roofing Tiles, &c.—8,090, R. Ash, Ventilation.—5,752, J. Parsons, Drain-pipe.—5,950, T. and H. Grimbleby, Roofing Tiles.—6,486, H. Price, Hopper Ventilating Casements.—6,509, P. Justice, Gas-fittings.—6,912, G. Butt, Wood Mouldings.—8,318, S. Wallis and T. Wiseman, Cowl.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

10,416, J. Shanks, Water-closets.—10,721, T. Mercer, Collecting and Storing Rain-water from Roofs.—11,114, G. Greig, Diffusing Air Supplied for Ventilation.—12,156, J. Bedford, Ventilators.—12,468, J. Cushing, Water-closet Basin.—12,832, B. Skipworth, Self-acting Window Fastener.—6,099, R. Mason, jun., Valve Apparatus for Water-closets.—6,850, G. Redfern, Preventing Concussion in Water-pipes.—7,242, N. Haigh, Automatic Feeding-motion for Wood Tenoning Machines.—10,249, J. White, Water Waste Preventing Cistern.—11,001, W. Hassall, Jointing Stoneware, Concrete Pipes, &c.—11,141, H. Dickson, Chimney Tops.—11,458, J. Farmer, Making and Pressing Bricks.—11,462, C. Walton, Pressing, Bricks, Tiles, &c.—12,056, T. Normanton, Ventilating Apparatus.—14,726, R. Lee and J. Hodgson, Concrete Fireproof Building Material.—7,361, H. Lake, Manufacture of Cement.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JULY 1.

By DRIVER & CO.

Addington, Kent—A fruit and hop plantation, 4a. 0r. 18p., freehold	£350
Eight freehold cottages and gardens	680

By WILKINSON & SON.

Brighton—19, Albany-villas, copyhold	1,000

JULY 2.

By DRIVER & CO.

Isle of Wight, Ryde—The freehold residence, Duver Bank	410
2, Chester Houses, term 963 years, no ground-rent	400

JULY 5.

By TUNLEY & CO.

Shoreditch—138 and 139, High-street, 78 years, ground-rent 13*l.*	2,700
Chelsea—42, Whitehead's-grove, and a ground-rent of 14*l.* a year, 21 years, ground-rent 1s.	630
7 and 9, Walton-street, 56 years, ground-rent 1*l.*	1,700
86, Walton-street, 56 years, no ground-rent	£750
35 to 41 odd, Green-street, and a ground-rent of 4*l.*, term 57 years, no ground-rent	1,500
1 and 3, Rawling-street, 14 years, ground-rent 1s.	450
42, Godfrey-street, 36 years, ground-rent 1*l.*	360
Hammersmith—Ground-rent of 28*l.* 10s., reversion in about 70 years	620

By MURRELL & SCOBELL.

City-road—21 to 24, Richmond-street, freehold	1,140
Hammersmith—268, King-street, 22 years, ground-rent 6*l.*	420

By WETHERALL & GREEN.

Harrow—Orchard and Laburnham Houses, freehold	1,445

JULY 6.

By C. & H. WHITE.

Camberwell—30 and 31, Clarendon-street, 39 years, ground-rent 5*l.* 19s.	400
Lambeth—67, Regent-street, freehold	430
Wandsworth—7, 8, and 9, Lydden-road, freehold	355
Garratt-lane—Two plots of freehold land	180

By DEBENHAM, TEWSON, & CO.

Camberwell—62 and 64, New Church-road, freehold	1,200
Worcester Park, Redcross-road—Ground-rents of 15*l.*, reversion in 79 years	300
Grafton-road, two enclosures of land, 6a. 3r. 28p. freehold	500
Grafton-road, enclosures of land, 31a. 1r. 4p. freehold	3,000
Salisbury-road, two enclosures of land, 8a. 1r. 33p. freehold	795

By CHINNOCK, GALSWORTHY, & CO.

Yorkshire, near Ripon—The East Tanfield Estate, containing 1,100a. 2r. 2p., freehold	30,000

JULY 7.

By SALTER, REX, & CO.

Fulham—37, Lilyville-road, 92 years, ground-rent 8*l.*	565

By IZARD & DAWE.

Cumberland Market—20, Redhill-street, 36 years, ground-rent 19*l.*	130
Somers Town—48 and 49, Little Clarendon-street, 4 years, ground-rent 14*l.*	14

By W. HALL.

Waltham—1 to 4, Alfred-cottages, freehold	200
Edgware-road—No. 268, term 6 years, ground-rent 6*l.*, with reversion for 14 years	510

JULY 8.

By BRADEL & CO.

Bury St. Edmunds, near—Two plots of freehold land, 0a. 3r. 26p.	156

By H. V. CHEW.

Poplar—2, Woollett-street, freehold	245

By DUNN & SOMAN.

City—A profit rental of 24*l.* 14s., term 19 years	1,420

JULY 8.

By INMAN, SHARP, & HARRINGTON.

City, Clement's-lane—Ground-rent of 52*l.* 10s., reversion in 54 years	1,630
Norwood, Auckland-road—The residences Summerleigh and Redholme, 96 years, ground-rent 4*l.*	1,450
Lower Clapton—149, Clarence-road, freehold	500

By DEBENHAM, TEWSON, & CO.

Whitechapel-road—No. 105 and 1, Thomas-street, 23 years, ground-rent 70*l.*	450

By NEWBON & HARDING.

Islington—26, Compton-terrace, 31 years, ground-rent 10*l.*	650
Nos. 257 and 258, Upper-street, freehold	7,800
Camden Town—166, Great College-street, freehold	2,600

By H. RUTLEY.

Regent's Park—Ground-rent of 5*l.*, reversion in 51 years	135
Ground-rent of 7*l.* 10s., reversion in 53 years	255
Euston-square—Ground-rents of 21*l.*, term 33 years	315
Hampstead-road—7, Little George-street, 24 years, ground-rent, 4*l.* 7s.	230
Camden Town—183, Arlington-road, 25 years, ground-rent 4*l.*	215

By C. C. & T. MOORE.

Bethnal Green—23, Collingwood-street, freehold	240
Mile End—145, 147, and 157, Jubilee-street, and 4, Woolsey-street, 14 years, ground-rent 15*l.*	300
149 and 155, Jubilee-street, 14 years, ground-rent 4*l.* 10s.	185

By E. STIMSON.

Wandsworth Common—5, Arundel-terrace, freehold	400
Peckham, Carlton-grove—Ground-rents of 40*l.*, reversion in 67 years	1,150
Dalston—42, Colveston-crescent, 70 years, ground-rent 7*l.* 10s.	450
Kennington—44 and 46, Devonshire-street, 4 years, ground-rent 6*l.*	50

By BLISS & SONS.

Hackney-road—59 and 61, Dove-row, freehold	475
45, Mansford-street, freehold	520
14 and 16, Minerva-street, 18 years, ground-rent nil	340
37, 39, and 41, Temple-street, 13 years, ground-rent 6*l.* 13s. 6d.	230
1, 1½, 2, and 3, Seabright-street, 33 years, ground-rent 12*l.* 2s.	600
Hoxton—13, Allerton-street, 21 years, ground-rent 5*l.* 7s. 2d.	80
16 and 18, Allerton-street, 21 years, ground-rent 7*l.* 7s.	220
29, 30, and 31, Allerton-street, 21 years, ground-rent 10*l.*	355
Peckham—50, 68, 78, and 80, Hill-street, and ground-rents of 109*l.* 4s., 2½ years, ground-rent 68*l.* 15s.	370
Bethnal Green—The Bricklayers' Arms public-house, freehold	2,200
16 and 17, Church-row, freehold	1,010

JULY 9.

By H. C. NEWSON.

Pimlico—43, Moreton-place, 45 years, ground-rent 8*l.*	525
Eccleston-square—28, Berwick-street, 34 years, ground-rent 5*l.*	590
Pimlico—157, Tachbrook-street, 41 years, ground-rent 8*l.*	555
Westminster—12, Winchester-terrace, 48 years, ground-rent 6*l.* 10s.	390
12, Vincent-street, 23 years, ground-rent 6*l.*	120
14 to 24 even, Vincent-street, 23 years, ground-rent, 36*l.*	815

By NORTON, TRIST, WATNEY, & CO.

St. Giles's—59, High-street, freehold	1,320
Kennington-grove—Copyhold ground-rents of 70*l.*, term 69 years	1,020

By HAMPTON & SONS.

Clerkenwell—25 to 35 odd, Exmouth-street, 29 years, ground-rent, 124*l.*	£1,820

By BAKER & SONS.

Ham Common—The freehold residence, Selby House	575
Lindfield, Sussex—Two copyhold cottages, and a plot of land	320
Shenley—An enclosure of freehold land, 9a. 0r. 19p.	550
An enclosure of freehold land, 29a. 3r. 11p.	2,000
An enclosure of freehold land, 35a. 0r. 12p.	3,000

By G. A. WILKINSON.

Hornsey—Ground-rents of 54*l.*, reversion in 91 years	1,240
Ground-rents of 42*l.*, reversion in 91 years	950
Anerley—18, Beverley-road, 79 years, ground-rent 11*l.*	340

MEETINGS.

SATURDAY, JULY 17.

Architectural Association.—Visit to Penshurst Place and Chiddingstone. (See advertisement on front page of last week's *Builder*.)

THURSDAY, JULY 22.

Builders' Benevolent Institution. — Annual meeting, Willis's Rooms. 3 p.m.

Miscellanea.

Lead Coated Iron Sheets.—Attempts have frequently been made in times past to use lead as a protective covering for metal sheets, but the success hitherto achieved in this direction has been small. Lead while in a molten state absorbs various gases, and is thus prevented from adhering to metallic surfaces, small holes and blisters appearing in the lead covering. In addition to this, melted lead runs thick and sluggish, so that a coating formed from it is unevenly distributed, and full of ridges and inequalities. A new process recently introduced by the Ajax Metal Company of Philadelphia, and which has been patented in this country by Mr. J. Calmer, of that city, appears to have overcome these difficulties. Metallic lead is treated with sal-ammoniac, arsenic, phosphorus, and borax, or a similar flux, which so changes the nature of the metal that iron or steel sheets can be treated with it by a process similar to galvanising with zinc. The process is described as follows:—Ordinary pig-lead is melted in a suitable vessel, after which the surface of the melted metal is covered with powdered charcoal, in order to prevent oxidation, and retain the materials afterwards introduced. For every hundred pounds of lead thus melted, three ounces of sal-ammoniac are added, after which half an ounce of arsenic, then one ounce of phosphorus, and, lastly, half an ounce of borax, or a similar flux. These substances are introduced separately, and all that is then necessary in order to coat an article is to free the surfaces from dirt or scale, and dip them in the same manner as when galvanising with zinc. Should the metal when prepared not be needed for immediate use, it may be run into bars or ingots for future application, either as solder, or for coating metallic surfaces, or for mixing with other soft metals, such as zinc, tin, copper, &c. The method is not only applicable to lead, but may be used with various metals used for coating, such as tin, zinc, &c. It is claimed by the inventor that lead treated in this way will attach itself more strongly to iron or steel than zinc, and an equal surface may be covered with less than half the weight of metal that would be required if using zinc in the ordinary process of galvanising, so that, according to this statement, a saving of fifty per cent. of weight is gained by using lead on this system, so far as the protective coating is concerned. In addition to this, it is stated that the deterioration in strength that takes place when iron is "galvanised" is not present when the lead coating is used. If these statements are borne out by practical experience,—and, so far as we can judge from samples submitted to us, they appear to be well founded,—there is no doubt that the new process will have a wide application. For covering roofs, in place of sheet lead or zinc, for wire rope, coating chains and telegraph wires, and many other purposes, the system will doubtless prove valuable. The invention is being introduced into this country by Messrs. P. S. Justice & Co., of 46, Chancery-lane, who are the agents for the Ajax Metal Company.

A Large Clock and Chimes have recently been erected in Chard Parish Church, Somerset, the gift of Mr. George England. The clock shows time on two skeleton dials, strikes the hours upon a 25 cwt. bell, and the chimes play upon the eight bells. Messrs. John Smith & Sons, Midland Clock Works, Derby, carried out the work.

The Low Price of Steel and Iron.—Messrs. Matheson & Grant's half-yearly engineering trades' report, issued on the 15th inst., says,—"The continued fall in the prices of iron can only be remedied by the voluntary or forced reduction of output, but no common agreement or equitable system of doing this seems possible. The stocks of pig-iron continue to increase both at Middlesbrough and Glasgow, and a financial collapse of some of the holders may be looked for. The fall in the value of rolled iron is greater than the saving in cost by the cheapness of materials and wages, although in the latter respect the sliding scale arrangement admits of an adjustment wanting in other trades. In the desire to bring expenditure into accord with current prices there is a falling off of quality in some of the cheaper kinds of iron which cannot but cause harm in the foreign markets of this country. Amidst the further general fall in values during the last six months, steel has moved faster than iron, and the due proportion between the two is not yet established. The combination among the English and Continental rail-makers, which last year prevented prices falling below 4*l.* 10s. per ton, came to an end early in the spring, and at a few of the best situated works, with the latest appliances, steel rails have been sold at less than 4*l.* per ton. As the present rates, with freight and duty added, only exceed the United States current prices by about one dollar, a resumption of shipments to America is not improbable, especially as the rail mills there are well employed at firm prices. The output of steel plates and bars has been considerable, the falling off in shipbuilding having been met more largely than heretofore by the increasing demand for bridges. The producing capacity is, however, still in excess, and the keen competition confirms the fact that the cost of production is primarily governed by the advantages arising from geographical position."

The Birkbeck Building Society. — The thirty-fifth annual meeting of this society was held on the 8th inst., at the Offices, 29 and 30, Southampton-buildings, Chancery-lane. The report, adopted unanimously by the meeting, states that the receipts during the year ending 31st of March last amounted to 7,619,003*l.*, making a total from the commencement of the society of 92,259,679*l.* The deposits from members and others were 6,655,149*l.*, and the payments on shares were 136,674*l.* The gross profits on the year were 148,174*l.*, of which 136,576*l.* have been appropriated to the payment of interest and bonus to shareholders and interest to depositors and defraying expenses of management, leaving a net profit of 11,598*l.*, making, with the balance brought from last year, a sum of 189,696*l.* in excess of liabilities. The permanent guarantee fund, which now stands at 110,000*l.*, is invested in Consols. The balance, 79,696*l.*, is carried forward to next year's account. The balance-sheet shows a sum of 3,391,394*l.* of surplus funds which are temporarily invested in Consols and other securities.

Wolverhampton Borough Surveyorship. At the meeting of the Wolverhampton Town Council on Monday afternoon, the General Purposes Committee reported that they had received a letter from the Borough Surveyor (Mr. G. Eastlake Thoms, M. Inst. C.E.) resigning his appointment as Engineer and Surveyor to the Corporation of Wolverhampton, as from the 1st of August next, and thanking the members of the Council for the kindness and consideration he had invariably received at their hands during the past nine years. On the recommendation of the Committee, the resignation was accepted, and the present Assistant Surveyor, Mr. R. E. W. Berrington, was appointed to succeed Mr. Thoms, at a salary of 220*l.* a year.

The Royal Agricultural Show at Norwich.—At Stand No. 210 (Machinery in Motion Department), Messrs. Marshall, Sons, & Co., of Gainsborough, exhibit a large assortment of their well-known productions, foremost amongst which may be mentioned their portable engines of 6, 7, and 14-horse power, the first of which is fitted with their patent apparatus for raising and lowering the chimney. This is an ingenious contrivance, and is a very useful adjunct to a portable engine.

Trade Mem.—Messrs. Rottmann, Strome, & Co., of St. Mary Axe, E.C., announce that they have established a house at 46, Gordon-street, Glasgow, situate in the new block of buildings by Messrs. Bennett & Son.

Finsbury and Shoreditch Polytechnic. On Saturday afternoon the Princess Christian laid the foundation-stone of the Finsbury and Shoreditch Polytechnic, in Appold-street, Finsbury-square. The main object of the founders of the institution is to provide a technical training of a practical and elementary kind, suited to the requirements and means of young mechanics and artisans; and it will be conducted on the model of the Polytechnic, in Regent-street. The building is to consist of a swimming-bath and a gymnasium on the basement floor; a concert-hall (66 ft. by 40 ft.), a games-room, a drawing-room, a reading-room, and a refreshment-room, with lavatories, on the ground-floor; a gallery to the hall, workshops designed for technical instruction, and class-rooms, on the first floor; and a flat concrete roof, to be used as a play-ground, for open-air concerts, promenading, &c., this roof being about 120 ft. by 70 ft. The elevation will be in the Tudor style. The cost of the building, without fittings, will be about 8,000*l.* Mr. H. W. Dobb (Borer & Dobb), London-wall, is the architect, and the builder is Mr. J. H. Mollett, both of whom had the honour of being presented to the Princess.

Appointments in the Gift of the Metropolitan Board of Works.—Mr. Harben has given notice that at the meeting of the Board this Friday, the 16th inst., he will move (*a*) "That no person shall be allowed to be a candidate for any office or situation in the gift or appointment of the Board who is a member of the Board, or who has been so within three calendar months of the day of election, unless the office or situation has become vacant since such person ceased to be a member of the Board." (*b*) "That no son of any member of the Board shall be admitted a candidate for any office or situation in the gift or appointment of the Board or any Committee."

Wimbledon Camp.—We are informed that this year the whole of the Camp is lighted by Messrs. Defries' Safety Lamps and Safety Mineral Oil. The burners are of three sizes, 43, 62, and 85 candle-power. The result is a brilliant illumination, said to be obtained at a saving of four-fifths of what gas would have cost. The lamps are made on the Company's new patented principle, whereby the oil is placed outside and on top of the lantern. The effect of this arrangement is that the flame is always at the same height, every drop of oil is consumed, and there is no shadow cast.

Building Materials in the Rhine Provinces.—An interesting paper was lately read by Herr Wiethase before the Architectural and Engineering Association at Cologne, according to which it would seem that the improved means of transport now available permit building stone to be carried an average distance of about 120 miles instead of only 20 miles, as was formerly the case. This fact has much to do with the present development of architectural skill in Western Germany. The Kyllthal stone, which comes from near Treves, is largely used in Cologne, where the extensive municipal improvements have caused exceptional building activity during the last few years.

Proposed New Park for Hammersmith. We are glad to see that the Works and General Purposes Committee of the Metropolitan Board of Works have resolved to recommend "That the Board do apply to Parliament in the next Session for power to acquire the Ravenscourt Park Estate, Hammersmith, for the purpose of laying the same out as a public park, subject to the Vestry of Hammersmith contributing one half of the cost, and that it be referred back to the Committee to enter into a conditional agreement for the acquisition of the said estate, and to the Parliamentary Committee to take steps for obtaining the necessary Parliamentary powers."

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	5	0	7	0	0
Teak, E.I. ....load	11	0	0	15	0	0
Sequois, U.S.....foot cube	0	2	4	0	2	9
Ash, Canada ....load	3	0	0	4	10	0
Birch ,, ...	2	10	0	4	0	0
Elm ,, ...	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,, ...	2	10	0	5	0	0
Canada	4	0	0	6	10	0
Pine, Canada red	2	10	0	4	0	0
,, yellow	3	0	0	5	0	0
Lath, Dantsic ....fathom	3	10	0	5	0	0
St. Petersburg	4	0	0	6	0	0
Wainscot, Riga....log	2	15	0	4	10	0
,, Odessa, crown	3	7	6	0	0	0
Deals, Finland, 2nd and 1st...std. 100	7	0	0	8	0	0
,, 4th and 3rd	6	0	0	7	0	0
Riga	6	0	0	7	0	0

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Deals, St. Petersburg, 1st yellow ...	8	0	0	14	0	0
,, 2nd ,, ...	7	0	0	8	0	0
,, white	7	0	0	10	0	0
Swedish	6	0	0	15	0	0
White Sea	7	0	0	17	10	0
Canada Pine, 1st	17	0	0	30	0	0
,, 2nd	13	0	0	17	0	0
,, 3rd, &c.	6	0	0	10	0	0
,, Spruce 1st	8	0	0	11	0	0
,, 3rd and 2nd	5	0	0	7	10	0
New Brunswick, &c.....	5	0	0	7	0	0
Battens, all kinds	4	0	0	12	0	0
Flooring Boards, sq. 1 in., Prepared, first		0	9	0	13	0
Second		0	7	6	8	6
Other qualities		0	5	0	7	0
Cedar, Cuba.....foot		0	0	3½	0	0 4
Honduras, &c.		0	0	2¾	0	0 4
Australian		0	0	2	0	0 3
Mahogany, Cuba		0	0	5	0	0 7½
St. Domingo, cargo average		0	0	5	0	0 7½
Mexican ,, ...		0	0	3½	0	0 4½
Tobasco ,, ...		0	0	4	0	0 6½
Honduras ,, ...		0	0	4½	0	0 6¼
Maple, Bird's-eye.....		0	0	6	0	0 8
Rose, Rio .....ton		7	0	0	10	0 0
Bahia.....		6	0	0	10	0 0
Box, Turkey		5	0	0	17	0 0
Satin, St. Domingo .....foot		0	0	7	0	0 11
Porto Rico		0	0	8	0	1 2
Walnut, Italian		0	0	4	0	0 5
METALS.						
IRON—Pig, in Scotland .....ton		0	0	0	0	0 0
Bar, Welsh, in London.....		4	10	0	4	17 6
,, ,, in Wales		4	5	0	4	10 0
,, Staffordshire, London		5	5	0	6	10 0
Sheets, single, in London.....		6	15	0	8	10 0
Hoops ,, ...		6	0	0	7	0 0
Nail-rods ,, ...		5	10	0	6	10 0

METALS (*continued*).	£.	s.	d.	£.	s.	d.
COPPER—						
British, cake and ingot .....ton	42	0	0	43	0	0
Best selected	43	0	0	44	0	0
Sheets, strong.....	49	0	0	50	0	0
,, India	46	0	0	47	0	0
Australian	0	0	0	0	0	0
Chili, bars	39	0	0	39	10	0
YELLOW METAL.....lb.	0	0	4¼	0	0	4½
LEAD—Pig, Spanish	13	2	6	0	0	0
English, common brands.....	13	12	6	0	0	0
Sheet, English	14	2	6	14	5	0
SPELTER—						
Silesian, special .....ton	14	5	0	0	0	0
Ordinary brands	14	0	0	14	2	6
TIN—						
Banca .....ton	0	0	0	0	0	0
Billiton	0	0	0	0	0	0
Straits	100	15	0	0	0	0
Australian.....	101	0	0	0	0	0
English ingots.....	104	0	0	0	0	0
ZINC—						
English sheet .....ton	18	0	0	18	5	0
OILS.						
Linseed .....ton	21	0	0	21	7	6
Cocoanut, Cochin	32	10	0	33	0	0
Ceylon	26	0	0	26	5	0
Copra.....	0	0	0	0	0	0
Palm, Lagos	24	0	0	0	0	0
Palm-nut Kernel	0	0	0	0	0	0
Rapeseed, English pale.....	22	5	0	22	10	0
,, brown	20	15	0	21	0	0
Cottonseed, refined	18	0	0	18	10	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	6	0	0	10	0	0
,, Refined	8	0	0	13	0	0
TURPENTINE—						
American, in casks.....cwt.	1	5	4½	0	0	0
TAR—Stockholm .....barrel	0	15	0	0	15	6
Archangel.....	0	10	6	0	11	0

COMPETITIONS AND CONTRACTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Rebuilding Workhouse	Elham Union.....	21*l.*	August 30th	i.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Portland Cement	Hove Commissioners ...	*Official*	July 20th	ii.
Construction of Sewers.....	Acton Local Board	C. N. Lailey	do.	ii.
Cleansing, and Re-painting Infirmary	Woolwich Union	*Official*	July 21st	ii.
Painting, &c., Parkhurst (Isle of Wight).....	War Department.....	do.	do.	i.
Well Sinking	Newport Pagnell R.S.A.	G. W. Branson.....	do.	ii.
Wood Paving	St. Martin-in-the-fields Vestry	*Official*	July 22nd	ii.
Repairs, &c.....	St. George-in-the-East Vestry	Wilson, Son, & Aldwinckle.....	July 23rd	xiii.
Road Materials	Richmnd,(Surrey)U.S.A.	W. Brooke.....	do.	xiii.
Painting, Lime-whiting, &c., Brecon	War Department.....	*Official*	July 24th	i.
Construction of Reservoir, Supply of Pipes, &c.	Cranleigh Water Co. ...	do.	July 26th	ii.
Seven Cottages, Otterbourne.....	Southampton Corporatn	W. Matthews	July 27th	ii.
Board-Room, Offices, and Premises	Stationers' Company ...	R. W. Mylne	do.	ii.
Flints, Broken Granite, &c.	Southgate Local Board	C. G. Lawson	do.	ii.
New Post-Office, Aldershot.....	Com. of H.M. Works...	*Official*	do.	ii.
Town-hall, Municipal Offices, &c.....	Dewsbury Corporation	H. Holtom.....	do.	ii.
Erection of Infirmary	Barnet Union	J. Ladds	July 28th	xiii.
Drainage Works	St. George's Union.....	H. Saxon Snell	do.	xiii.
Road Making	Tunbridge Wells Lcl Bd	W. Brentnall	July 30th	ii.
Brick Culvert and Pipe Drain	Yeovil Corporation.....	R. Vining	do.	ii.
Water Works Construction	Melton Mowbray U.S.A.	B. Latham.....	July 31st	xiii.
Laying Pipes	Oxford Corporation.....	T. & C. Hawksley	do.	xiii.
Earth Drying and Storage Shed	Met. Asylums Board ...	J. W. Peggs	do.	xiii.
Well Sinking	Farnham Water Co. Lim	Pollard & Forder.....	August 2nd	xiii.
Landing Stage, &c., Kingswear.....	Great Western Ry. Co.	*Official*	August 3rd	ii.
Construction of Reservoirs, &c.....	Oswestry Corporation...	Filliter & Rofe	August 5th	ii.
Yellow Deal Ends and Battens.....	Eton Union	*Official*	August 10th	ii.
New Town Hall.....	Portsmouth Cor.	W. Hill	August 25th	ii.

TENDERS.

ASHTON-UNDER-LYNE.—For altering six single cottages into through houses. Mr. J. H. Burton, architect, Ashton-under-Lyne :—

William Neal, Ashton-under-Lyne.....	£110	0	0
John Robinson, Ashton-under-Lyne ...	107	0	0
John Clayton, Denton	101	10	0
Allen Holmes, Ashton-under-Lyne.....	98	0	0
H. Rowland, Ashton-under-Lyne	89	10	0
Z. Pike, Hooley Hill	85	15	0
Walter Clough, Ashton-under-Lyne ...	85	0	0
Charles Morris, Ashton-under-Lyne ...	83	5	0
J. W. Williamson, Ashton-under-Lyne	82	0	0
Thomas Dean, Ashotn-under-Lyne* ...	82	0	0

* Accepted.

BLACKHEATH.—For alterations and decorative work to Macartney House, Blackheath, for the Rev. Walford Green. Messrs. Dunk & Geden, architects, Leadenhall-street :—

Colls & Sons	£1,585	0	0
S. J. Jerrard (accepted).....	1,374	0	0

For new conservatory :—

Arthur Dashwood & Co. (accepted)...	181	0	0

BOW.—For sundry alterations to and fitting up the bar of the Coach and Horses public-house, Bow-road, for London and Burton Brewery. Mr. T. S. Archer, architect :—

Alterations.

Barnes.....	£569	0	0
Lidstone & Son.....	516	0	0
Holliday & Greenwood	511	0	0

Bar Fittings.

Holliday & Greenwood	135	0	0
Lidstone & Son.....	124	0	0
Barnes.....	98	10	0

New Fronts.

Lidstone & Son.....	146	0	0
Barnes.....	80	0	0

BASINGSTOKE.—For the erection of Board schools for 1,300 boys, girls, and infants, including covered playgrounds, fences, and drainage. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove, 26, Budge-row, E.C. :—

Barton	£14,928	0	0
Martin	14,600	0	0
Jones	13,985	0	0
Allen & Sons	13,600	0	0
Bull & Co.	13,595	0	0
Woodbridge.....	13,580	0	0
Gibson	13,577	0	0
Stevens & Bastow	13,500	0	0
W. Brown.....	13,490	0	0
Musselwhite.....	13,477	0	0
Claridge.....	13,359	0	0
Elliot	13,320	0	0
Botterhill	13,157	0	0
Hickinbotham	13,069	0	0
Brown	12,996	0	0
Kingerlee	12,995	0	0
Green.....	12,993	0	0
Haines	12,988	0	0
Smith	12,774	0	0
Watson	12,605	0	0
Leslie & Knight	12,487	0	0
Woodroffe.....	12,460	0	0
Knight	12,200	0	0
Sims	12,194	0	0
Crook.....	12,097	0	0
Goodall, Basingstoke*	11,964	0	0
Taylor	11,644	0	0
Beale	11,396	0	0
Hilton & Son	11,000	0	0

* Accepted, at 10,351*l.*, after fresh tenders from five selected builders.

BROCKMOOR (near Birmingham).—For the erection of schools, for the Kingswinford School Board. Messrs. Rollinson & Beckley, Brierly Hill, and Mr. J. H Burton, Ashton-under-Lyne, joint architects :—

S. Bennett & Son, Brierly Hill.....	£2,058	0	0
John Guest, Brettell-lane	1,960	0	0
W. Willetts, Old Hill.....	1,949	0	0
C. A. Horton, Brierly Hill	1,867	0	0
J. H. Bate, Dudley.....	1,800	0	0
Dorse & Son, Cradley Heath*	1,750	0	0

* Accepted.

CHATHAM.—For erecting ten cottages at Chatham, for Mr. M. Packer. Mr. J. W. Nash, architect, Rochester :—

G. West, Strood	£2,500	0	0
J. L. Trueman, Chatham	2,125	0	0
C. Fowle, Chatham	2,116	0	0
Edser & Bockham, Chatham	1,985	0	0
W. Fry, Rochester	1,925	0	0
C. E. Skinner, Chatham (accepted)	1,715	0	0

CHISLEHURST.—For stables, &c., near Chislehurst, Kent. Mr. St. Pierre Harris, architect and surveyor, Basinghall-street :—

Otway, Chislehurst	£1,087	0	0
Knight, Sidcup	1,057	0	0
Hart Bros. St. Mary Cray.....	850	0	0
Coleman, Poplar	837	0	0
F. Wood, Chislehurst (accepted)	797	0	0

COLCHESTER.—For buliding house in Bergholt-road, Colchester, for Mr. J. Topsfield. Mr. Walter Scargill, architect. No quantities :—

F. Dupont (accepted).....	£295	0	0
S. Garwood	288	0	0
W. Pitt & Son	284	16	0

[All of Colchester.]

FOLKESTONE.—For public library and museum at Folkestone. Mr. Brightwen Binyon, architect :—

J. E. Hughes	£5,025	0	0
Hayward & Paramour.....	4,412	0	0
Tilden, Tunbridge	4,122	0	0
William Brooks	4,100	0	0
Daniel Baker	4,075	0	0
H. M. Moody.....	4,062	16	0
George C. Conley.....	3,997	0	0
W. H. Holdoun.....	3,889	0	0
W. G. Prebble	3,859	0	0
Robert Webster*	3,833	0	0

[Architect's estimate, 4,450*l.*]

* Accepted by the Corporation, subject to the approval of the Local Government Board.

GILLINGHAM (near Chatham).—For erecting corn store, for Mr. R. Tassell. Mr. J. W. Rush, architect Rochester :—

A. F. Smith	£963	0	0
C. Snow	824	0	0
C. E. Skinner.....	789	0	0
A. H. Filley (accepted).....	635	10	0

HASTINGS.—For new stabling, for Mr. G. A. Thorpe, Highcroft Ore, Hastings. Messrs. W. H. & J. D. Murray, architects, Hastings :—

Snow.....	£534	0	0
W. E. Warman.....	530	0	0
Eldridge & Cruttenden	486	0	0
Small	479	3	9

LAMBETH.—For new oak seating at the parish church, Lambeth. Mr. J. Oldrid Scott, architect :—

Farmer & Brindley, Lambeth	£1,442	0	0
Robinson, London	1,212	0	0
Lapthorne & Co., Lambeth	926	0	0
Elwell, Yorkshire.....	890	0	0

LONDON.—For the erection of the Thrawl-street, Whitechapel, Workmen's Dwellings, for the East-End Dwellings Company (Limited). Messrs. Davis & Emanuel, architects, Finsbury-circus. Quantities by Mr. F. Downing, Whitehall-yard, S.W. :—

Thomas Boyce.....	£14,100	0	0
Samuel Chafen	14,060	0	0
William Shurmur	13,491	0	0
F. & F. J. Wood.....	12,583	0	0
George Shaw	12,564	0	0
Wall, Bros.	12,390	0	0
Colls & Sons.....	12,350	0	0
Mowlem & Co.....	12,200	0	0
E. Lawrance & Sons	11,989	0	0
G. S. S. Williams & Son	11,989	0	0
S. J. Jerrard	11,939	0	0
John Grover & Son	11,673	0	0
Harriss & Wardrop (accepted)	11,663	0	0

LONDON.—For warehouse and offices, No. 74, Lower Thames-street, E.C., for Messrs. Reynolds & Eason. Mr. Banister Fletcher, architect :—

Fanthorpe	£3,334	0	0
Chessum	3,022	0	0
Tyerman	2,980	0	0
Gentry.....	2,922	0	0
Kiddle & Sons	2,916	0	0
Scrivener.....	2,892	0	0
Nightingale	2,845	0	0
Ashby Bros.	2,835	0	0
Garrud.....	2,831	0	0
Ashby & Horner	2,819	0	0
Pritchard & Son	2,799	0	0
Mills Bros.....	2,720	0	0
W. & H. Castle.....	2,683	0	0
Potter	2,510	0	0
Jackson & Todd	2,429	0	0
J. O. Richardson (accepted).....	2,327	0	0

LONDON.—For the erection of additional stabling, Baker's-row, Whitechapel, under the superintendence of Mr. Lanham, for the London General Omnibus Company:—

Hack	£1,344	0	0
Evans	1,305	0	0
Garrud.....	1,275	0	0
Haynes	1,150	0	0
Manley.....	1,097	0	0
G. Parker (accepted)	1,040	0	0
Knight.....	950	0	0
North Bros.	940	0	0

LONDON.—For erection of buildings, Oxford-street. Mr. Geo. Edwards, architect, Queen Victoria-street. Quantities supplied by Mr. H. Lovegrove, Budge-row :—

Martin Wells & Co.	£10,300 0 0
Higgs & Hill	9,940 0 0
Chas. Wall	9,300 0 0
Patman & Fotheringham	8,963 0 0
Perry & Co.	8,930 0 0
Stimpson & Co.	8,830 0 0
Mark	8,790 0 0
Scrivener & Co.	8,781 0 0
Shepherd	8,682 0 0
Brass & Sons	8,673 0 0
Ward & Lamble	8,643 0 0
G. & J. Green (accepted)	7,995 0 0

LONDON.—For alterations, &c., at 68, Dean-street, Soho, for Sir Richard F. Sutton, Bart. Mr. D. Cubitt Nichols, architect :—

Wetherilt, Lee, & Martin (accepted)	£144 10 0

LONDON.—For alterations and decorations at No. 37, Clarges-street, Piccadilly, for Mrs. J. Elvin :—

W. & E. Curtiss	£295 0 0
Aldin	216 0 0
Scott	195 0 0
Wetherilt, Lee, & Martin (accepted)	175 15 0

LONDON.—For alterations at the Blind School, St. John's Wood. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove :—

Langridge	£931 0 0
Burford	909 0 0
Boden	907 0 0
Allen & Sons	790 0 0
Scrivener & Co.	745 0 0

LONDON.—For alterations, decorations, &c., at 38, Clarges-street. Piccadilly, for Mr. F. Jaynes :—

W. & E. Curtiss	£335 0 0
Aldin	266 0 0
Wetherilt, Lee, & Martin (accepted)	224 15 0
Scott	217 0 0

LONDON.—For warehouse and office fixtures and fittings at 49 to 52, Jewin-street, and 1 to 3, Jewin-crescent, for Messrs. Dalton, Barton, & Co. Messrs. Dunk & Geden, architects, Leadenhall-street, E.C. :—

F. Sage & Co.	£1,431 0 0
J. & J. Greenwood	1,220 0 0
D. King & Son (accepted)	1,200 0 0
Crane and Hoist Work.	
R. Waygood & Co. (accepted)	102 10 0

LONDON.—For alterations to premises, Farringdon-street, for Mr. W. Lawley. Mr. Jas. Young, architect :—

Trent, Bros. (accepted)	£495 0 6

MANSFIELD (Notts.).—For building business premises, Market-place, Mansfield, for Mr. Wm. Taylor. Mr. R. Frank Vallance, architect. Quantities by the architect :—

F. Jay, Nottingham	£1,137 0 0
Reeve & Tomlinson, Bulwell	1,135 14 0
G. Bradder, Mansfield	1,092 0 0
E. Cuddy, Mansfield	1,079 0 0
W. A. Vallance, Mansfield	1,058 0 0
H. Alsop, Mansfield	999 0 0
J. Greenwood, Mansfield	995 0 0
S. & G. Frisby, Mansfield	990 0 0
H. Vickers, Nottingham	980 0 0
Fisher Bros., Mansfield	968 0 0
J. Moss, Mansfield	967 3 3
J. Sadler, Nottingham	957 6 6
F. Shaw, Ilkeston (accepted)	9.0 0 0

MANSFIELD (Notts.).—For the erection of a residence on the Lindley Estate, Mansfield, Notts., for Mr. W. F. Sanders. Mr. R. Frank Vallance, architect, Mansfield. Quantities by the architect :—

	House.	Boundary Walls, &c.
J. Sadler, Nottingham	£2,759 9 0	£133 14 0
Reeve & Tomlinson, Bulwell	1,754 0 0	214 0 0
H. Vickers, Nottingham	1,605 0 0	185 0 0
F. Jay, Nottingham	1,597 0 0	222 0 0
J. Moss, Mansfield	1,508 0 0	153 18 5
J. Greenwood, Mansfield	1,420 0 0	140 0 0
H. Alsop, Mansfield	1,391 0 0	80 0 0
S. & G. Frisby, Mansfield	1,349 0 0	112 0 0
Fisher Bros., Mansfield	1,337 0 0	179 0 0
F. Shaw, Ilkeston	1,295 0 0	168 0 0
W. A. Vallance, Mansfield*	1,245 0 0	107 11 0
E. Cuddy, Mansfield	1,192 0 0	92 10 0

* Accepted.

OPENSHAW.—For enlarging the Congregational schools in Lees-street. Mr. J. H. Burton, Ashton-under-Lyne, architect :—

Hannah Fielding, Droylsden	£1,017 0 0
Thomas Benson, Openshaw	1,002 0 0
William Neal, Ashton-under-Lyne	883 0 0
E. & C. Jackson, Higher Openshaw	850 0 0
Thomas Dean, Ashton-under-Lyne	849 0 0
Allen Holmes, Ashton-under-Lyne	847 0 0
J. W. Williamson, Ashton-under-Lyne	833 0 0
J. McFarlane, Manchester	826 0 0
Davison & Carr, Manchester	815 0 0
Butters & Carson, Manchester	812 0 0
William Holt, Manchester	806 0 0
John Smith, Openshaw	800 0 0
John Robinson, Ashton-under-Lyne	798 0 0
Jabez Gibson, Dukinfield	797 0 0
R. H. Grayson, Bradford	750 0 0
John Ross, Manchester (accepted)	743 0 0

ORPINGTON.—For stables at Orpington, Kent. Mr. St. Pierre Harris, architect :—

Knight, Sidcup	£216 0 0
Treadwell, Orpington	193 0 0
Laslett, Farnborough (accepted)	187 0 0

POPLAR.—For new stabling, at the Eagle Chemical Works, Poplar, for Messrs. J. F. Johnstone & Co. Messrs. Dunk & Geden, architects, Leadenhall-street, E.C. :—

W. Stubbs (accepted)	£685 0 0

SUDBURY.—For villa at Sudbury, near Harrow, Middlesex, for Mr. Thos. J. Harriss. Mr. Chas. H. Worley, architect, Great James-street. Quantities supplied by Mr. R. C. Gleed :—

Rodwell	£1,098 0 0
Holliday & Greenwood	1,077 0 0
Burdon	900 0 0
G. & J. Green (accepted)	895 0 0

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